DOCUMENT RESUME

ED 248 838 IR 011 287

AUTHOR	Tremaine, M. G., Ed.; Wagner, G. A., Ed.
TITLE	Readability: An Issue in Distance Learning. The Proceedings of a Conference Held at Massey University (Palmerston North, New Zealand, June 19-20, 1980).
INSTITUTION	Massey Univ. (New Zealand). Centre for Univ. Extramural Studies.
PUB DATE	Jun 80
NOTE	215p.
AVAILABLE FROM	Centre for University Extramural Studies, Massey University, Palmerston North, New Zealand (Free).
PUB TYPE	Collected Works - Conference Proceedings (021) -- Guides - Non-Classroom Use (055) -- Reports - General (140)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	*Cloze Procedure; Design Requirements; *Distance Education; Foreign Countries; *Instructional Materials; Layout (Publications); Literature Reviews; *Material Development; Production Techniques; *Readability; *Reading Comprehension; Textbook Evaluation
IDENTIFIERS	*New Zealand

ABSTRACT

Readability in distance learning, the cloze procedure as a means of assessing readability, and the preparation of distance learning materials are addressed in the following 14 conference papers: "Some Suggestions for Improving the Reading/Comprehension Skills of Students at a Distance" (Jean Anderson); "Student Response to the Presentation of Advanced Studies for Teachers' Unit Study Guide Material" (John McLellan); "Summarising the Literature on Readability" (Marianne Tremaine); "Readability Formulas and When to Use Them" (Graham Wagner); "Measuring the Readability of School Textbooks" (Lois Templer); "Applying the Cloze Procedure in Practice" (Diana McRae and Felicity O'Connor); "Ways of Varying the Blanks When Using the Cloze Procedure" (Graham Wagner); "Creating a Context for Understanding and Interpreting Cloze Results" (Marianne Tremaine); "Using the Results from Cloze Testing to Improve Technical Correspondence Institute Assignments" (Nola Holmes); "Correspondence School Courses: A Personal View" (Gilbert Hadfield); "Preparing Courses for the WEA Trade Union Postal Education Service" (Dorothy McGray and Heather Mulholland); "The Production Process for Study Guides at Massey University" (Terry Povey); "Course Development at the Technical Correspondence Institute" (Peter Wilkinson); and "Layout and Legibility of Printed Materials" (Terry Povey). A conference review by Donald Bewley is included. (LMM)

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Readability: An Issue In Distance Learning

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the proceedings of a conference held at Massey University, Palmerston North on 19 and 20 June 1980

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Centre for University Extramural Studies

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Foreword

by John Watson

John Watson has been the Director of the New Zealand Council for Educational Research since 1968. His introduction to distance education started forty years ago when, as a high school student, he was invited to help friends in a country district in South Canterbury with their mathematics assignments for pre-entry courses for aircrew in the RNZAF. Later he was closely associated with the educational services for the armed forces in Japan. It is scarcely surprising then that he has retained the interest in correspondence education that has been shown by successive directors of both the Australian and New Zealand Councils for Educational Research, or that he should have become so involved in the past decade with the expansion of extension services, and the use of satellites for educational purposes, beyond Australia and New Zealand into the oceanic expanse of the Pacific.

Distance education has arisen out of provisions for learning that depend upon a student receiving instructions and materials by mail, and then returning written answers to a teacher for correction, suggestion or criticism. A learner's capacity to read the instructions or the assignment has therefore always been basic to the whole process. The increasing supplementation of written instructions in the past 50 years by other media of communication, radio, cassettes, teletype, slow-scan television and the rest, and the introduction of the term 'distance' rather than 'correspondence' education, has not really altered this situation. Individual assignments remain the principal method of instruction. Those who prepare, distribute or evaluate such assignments in private proprietary schools, or in colleges and universities, or in the extension divisions of government departments, public corporations and the armed forces, continue to be preoccupied with the principles and practices of good course writing.

This means too, that critical reflection on such obligations has a much longer history than is sometimes assumed. The formation of home study associations to promote general adult education began to take root in English-speaking countries more than a century ago.

Their appearance was paralleled by the beginnings of university extension services, and also privately-owned correspondence schools which responded to the call for vocational training at home for millions of young adults who saw opportunities for advancement in the commercial and industrial world.

Equalising Opportunity

With the opening up of the pastoral lands of Australia and New Zealand early in this century, it was not long before parents began to press for 'lessons by post' for their children of primary and secondary age. In each of the newer and more spacious English-speaking nations, correspondence education soon became an important means of equalising educational opportunities for children on the prairies, in the backwoods, at the lighthouses, for the sick and for the crippled. And in all of these contexts an extensive body of experience gradually accumulated on procedures for producing instructional materials, encouraging independent study, helping parents to teach their children, preparing self-correcting assignments and much more. However, since busy teachers often have little time or incentive to document their hard-won experience, much of it has been forgotten, ignored, or lost.

For this reason and others, this modest volume edited by Marianne Tremaine and Graham Wagner, is doubly welcome both as a benchmark and as an antidote to complacency. In this country to date, provisions for research, experimentation or evaluation on distance education have been meagre - virtually non-existent, and such accounts as we have tend to be self-congratulatory reports or public addresses. It seems curious too that the publication of a comprehensive blueprint for the development of distance education, prepared by a working party set up in 1975 by the Department of Education has been so long delayed. Sadly, the resulting dearth of documentation greatly reduces the scope for public debate and interest at the very time when services for distance education seem to have entered upon their most exciting period of development in this century.

There is no simple explanation. It cannot be claimed for instance, that the need for more precise and up-to-date knowledge, or improved research, or more systematic monitoring of current practices has not been identified over the years. Indeed, given the priorities of the day, it is interesting that the first book published by the Australian Council for Educational Research just 50 years ago dealt with *Primary Education by Correspondence.*

FOREWORD

Through the post-depression period, the research sub-committees involved in setting-up a series of international conferences on correspondence education (Vancouver 1938, Nebraska 1948, Christchurch 1950, Pennsylvannia 1953) maintained a modest and dignified interest in relevant research and even fostered the idea of a modest fund to sustain it. It did not seem at all unusual that Unesco should ask the Director of the New Zealand Council for Educational Research in 1954 to produce a volume of research abstracts on correspondence education at the primary and secondary education levels as a guide to several nations who were then considering the introduction of systems of correspondence education. But the impetus waned, and the reasons are not yet clear. It may simply reflect that administrators of recent years have been more concerned with current practice than with theory and research. For the most part, as in other parts of the world, we have concentrated our attention on developing sophisticated and efficient delivery systems, or justifying distance education in terms of its capacity to compensate for social or geographic disadvantage, or its ability to provide educational experience commensurate with that offered by other modes of study. The absence of serious theoretical clarifications has been compounded by the fact that distance education has also been almost totally neglected in learned journals.

The papers published here from a small and unpretentious conference at Massey University last June, do not repair this lack. But they do give promise of a re-kindling of research interests in a significant form. First of all the papers are devoted to a single theme with which both learners and teachers may readily identify. Secondly, the research reported has been undertaken and supported, in the main, by the major institutions providing distance education in this country. Thirdly, the prime purpose of the conference was to bring together a small group of like-minded, but relatively inexperienced research workers so that they might gain strength and insight from their common concerns.

From that standpoint, the occasion has been an obvious success and a beginning of some importance. Indeed, if reviews of this like become annual events, one may hope for a steady advance in the quality of the research undertaken here in this field. It is with some pleasure then, that I congratulate the authors and editors of this volume, and commend their enterprise to all who seek to improve the quality of distance learning in this country.

Acknowledgements

We would like to thank all those who helped us. In particular, Professor Donald Bewley, Director of the Centre for Extramural Studies at Massey University for his encouragement and support in staging this conference; the New Zealand Council for Educational Research for its generosity in providing financial assistance; Miss Carol Connor for retyping and preparing the conference material for printing; Peter Ridder (NZCER) and Peter Herbert (Massey University) for suggestions and assistance with graphics and design; and the Departments of University Extension and Botany for the loan of equipment.

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Introduction

This conference grew out of an earlier seminar in September 1979 when a group of researchers working in distance education met to share common experiences and discuss the development of improved methods for research into learning at a distance.

The seminar was so successful that participants agreed there should be future meetings of distance learning researchers to build a cooperative information-sharing network.

This second conference has taken readability as its theme because of its importance in distance learning and because recent research into the readability of study materials has been carried out by the Technical Correspondence Institute and Massey University. Other distance learning institutions such as the Correspondence School and WEA/Trade Union Postal Service have also been exploring ways of making study materials more readable. Papers offered indicated that the researchers' interests were in three main areas: readability in distance learning in general, then more specifically with the cloze procedure as a means of assessing readability and finally the way that distance learning materials are prepared.

The conference papers have been grouped in three parts covering these topics with a final section reviewing the conference as a whole, including future directions for distance learning.

PART ONE

Readability In Distance Learning

This section on readability in distance learning begins with Jean Anderson's paper on ways of improving the reading skills of students at a distance and moves on to John McLellan's account of the effect of writing style on the readability of material produced by the Advanced Studies for Teachers' Unit (a correspondence unit for teachers attached to the Correspondence School).

Marianne Tremaine summarises the literature on readability in terms of a project on assessing the readability of study guides used by extramural university students. In the fourth paper in this section, Graham Wagner discusses readability formulas as a means of measuring readability, including their limitations, advantages and ways of using them and finally Lois Templer discusses principles and methods of improving the readability of school textbooks.

Some Suggestions For Improving The Reading Comprehension Skills Of Students At A Distance

by Jean Anderson

Jean Anderson is the Head of the English Department at Hamilton Teachers' College where she has been a lecturer for four and a half years. One of her special interests has been developing courses to help teachers' college students with literacy problems. She has also lectured at Teachers' Colleges in Port Moresby and New South Wales. She has an honours degree in Classics, Diplomas in Education and in Migrant Teaching and an M.Phil. from Waikato University. Her M.Phil. thesis was on "Functional Literacy at the Tertiary Level." In her 30 years of teaching she has taught at the pre-school, primary, secondary and tertiary levels. She began her teaching career in England but has also taught in Australia and New Guinea as well as New Zealand.

Quite properly, this conference is focused on the material being prepared for reading by students at a distance. The sessions are aimed at improving the lecturer's skills in writing and presenting material in written form. What is of greater interest to me is improving the skills of students in handling material that cannot be changed - the set texts, the books and articles for reference. If these were altered in any way, it would destroy not only the nature of the texts themselves, but also the educational nature of the courses.

The English language seems to lack a suitable word complementary to the word readability, which could be applied to the respondent in the reading process. We talk of the legibility and readability of writing, but have no single word to isolate the complementary qualities. The word literacy is used, but this refers to the ability to read and write, not just the ability to read. Perhaps a suitable word would be legeracy. A legerate student would, by my definition, be one who can interact with the written word, just as an orate one is skilled in speaking, and maybe a scriberate or scripsate one could be skilled in writing. The topic under consideration therefore, is the legeracy of students working at a distance; the processes which can improve the skills of students, working often in isolation, to extract the utmost from written material.

Much has been written and said about the processes of reading, but there seem to be five major ideas which are particularly pertinent to the situation of adult extramural students. My experience is on both sides of the process as one who has gained a degree and two diplomas by correspondence, and as one who has designed and taught courses by correspondence.

Interaction With Writer

The first idea is that the reader interacts with the writer. What the reader brings to the process is as important as what the writer says. Frank Smith, in his talk to the Waikato Branch of the International Reading Association in February 1980, speculated on this, and put forward the suggestion that students know what they don't know; that is, they are aware of the limits of their ignorance or the boundaries of their knowledge. This seems to me very important. My experience over the past few years has made me realise that, in most cases, students are particularly conscious of what they need to discover or to learn in order to be successful students. In fact, most students are so prepared to acknowledge their ignorance that they undervalue the knowledge and skills they have already mastered.

The second idea is suggested by the report of the Secondary Schools Examination Council in England (1964):

Understanding extends not only to the vocabulary of the passage interpreted in its immediate context, but beyond that to the line of argument which is pursued, the structure of a narrative and the outline of a description. It extends also to the intention of the writer and to the tone of a passage.

The key words are structure and intention. A student who can understand what the writer is trying to do, and how the material has been put together, how the elements in a passage of writing have been arranged, is well on the way to understanding the passage as a whole.

The third idea was suggested by Henry (1946):

It is not until we try to communicate the ideas of a passage to ourselves and others that we indeed conceptualise it and know what meaning we have. This idea is supported by evidence from the field of verbal *learning which strongly suggests that one learns best when the task one undertakes requires meaningful processing and overt response.*

Reading teachers in primary schools know this very well, and much of their work is designed to plan overt responses. They set up situations and plan activities so that children not only read, but try to communicate what they have read, sometimes in a different mode, by acting out a story, or drawing a picture to illustrate it, or answering questions or talking about what has been presented in written form.

Assessing Comprehension

The fourth idea was suggested by the work of Bormuth (1969) and Anderson (1972) in their consideration of assessing comprehension. The process suggested is that comprehension is best assessed by rephrasing the passage semantically and syntactically, that is by semantic substitutions and transform derivations. For example, the sentence "Jack and Jill went up the hill" can be changed by semantic substitution to "The children ascended the incline" and by transform derivation to "The hill was climbed by Jack and Jill". Combine the two, and the rephrased sentence reads, "The incline was ascended (or climbed) by the children". This obviously makes the original sentence far more complicated. But if we start with the premise that the original sentence is already complicated for our students the process (particularly the semantic substitution) makes it simpler. This will be discussed more fully later on.

The fifth idea comes from a consideration of the nature of the language itself. Halliday (1975) said:

It is now generally recognised that the adult language system is basically tri-stratal in nature - that it consists of sound, form and meaning.

It is my belief that in the consideration of reading we tend to ignore the interrelationship of these three elements, and concentrate on meaning without paying sufficient attention to sound and form, partly because we are accustomed to think of reading as being 'silent'.

Building on Foundation

These five ideas have formed the basis of my efforts to help students become more legerate. They are not isolated, but integrated in the techniques I have attempted. My technique begins with building on the foundation that students realise what they need to know. They are asked two simple questions: What is this course/unit/topic about and what are you studying? Students have no difficulty in answering these questions, and indeed can answer at different levels of specificity. For example: 'The course is about the history of 19th century Europe', or 'We are studying the chemical properties of hydrogen'.

Intention of Writer

The next step is to try to direct them to the writer's intention. In distance learning, this is often most clearly shown in the assignment topic. What is the tutor trying to find out that you know or understand? Once the student has grasped this, the purpose of the readings (and the writers') becomes clear. There are, however, two things students can do to help to clarify the purpose of the readings. First, students are asked to make a semantic substitution of the topic, eg.

Equality of educational opportunity in New Zealand is a myth. Discuss.

Students faced with such an assignment find it extremely difficult to handle as it stands, but if they are then asked to rephrase the statement without using the words 'equality', 'educational', 'opportunity', and 'myth', and to use a transform derivation to change the structure in whatever way they like, they have very little difficulty, and produce statements like:

It is not true that in New Zealand everyone has the same chance to go to school.

It is in this step, the paraphrase of the topic, that students bring their own knowledge, experience, and interpretation to their reading. Others will interpret 'equality of educational opportunity' as 'the same chance to attain School Certificate' or 'the same chance to acquire book learning'. Many interpretations can be made, but no matter what they are, they immediately make students aware of the purpose of the enclosed or suggested readings, because they are more aware of their general drift.

If we are also trying to improve the quality of students' writing, the next step is to focus on their expected response. This is most easily done by asking them to underline and paraphrase what they have to do with the topic. Strangely enough, for many this proves to be a very difficult task, but one which they rarely fail to do successfully.

They isolate words like 'discuss', 'identify', 'comment', 'illustrate', 'indicate', 'give examples', and paraphrase them like this:

discuss - give different viewpoints about,
illustrate - give examples,
identify - list, name,
indicate - show,
give examples - point to things which will support my statement/viewpoint.

Reading Gains Purpose

This exercise, the examination of the assignment topic, not only reveals the purpose of the suggested readings but indicates the students' purpose in reading. They are then alerted to why they are reading and may even be more economical in their work, reading what is relevant rather than aimlessly trying to make sense of what is peripheral to their study or at worst, outside its scope.

It may be as well at this stage to stop and look at the conditions under which many students work, lest you begin to think that these strategies are too pragmatic, and that students are being too circumscribed. Most extramural students are part-time students, fitting their study into the dark hours of night or early morning when the rest of the family is asleep and the demands of their full-time job are not immediately pressing. If you have studied, as I have, between feeding shearers in a wool shed with books resting on a wool bale, or in hospital awaiting the arrival of a baby, or in the car while the boys are playing football or the girls are at a ballet lesson, economy of effort becomes very important. Most extramural students are concerned with success, measured by grades of pass, not with the sheer interest in the subject which may be the luxury of the full-time student. Nor do isolated students have the opportunity to discuss what they have read, to bounce their ideas back against others with similar interests, and this brings me to the next suggestion for improving their legeracy.

Hearing Helps Understanding

It was suggested that the structure of a passage is important, that language has the elements of sound, form and meaning, and that *"it is not until we try to communicate the ideas of a passage to ourselves and others that we indeed conceptualise it and know what meaning we have"*. Two techniques help here: one, that students underline the first sentence in every paragraph, then read these sentences aloud into a tape recorder. This can then be played back to them while they are pruning the roses or doing the ironing. It is amazing how often hearing this rudimentary summary of a passage can aid comprehension. Some people can best understand when they see things written down, but others can best understand when they hear things spoken. Students hearing a passage read aloud can frequently understand it better than when they read it. If they have no tape recorder, then they can read it aloud or maybe have someone else read it to them, but this is not as good as listening to themselves presenting the material orally.

Communicating the Ideas

The final step depends again on oral work. This occurs when, after the summarised reading has finished and the whole passage or book has been read, students try to communicate the ideas to someone else. Here again a tape recorder is useful, but a better audience is a sympathetic spouse, friend or family member - preferably an ignorant one. Again, this can be done over the washing-up, or while the potatoes are being peeled. The student plays the role of teacher. *"I am now going to tell you why I think opera is the root cause of all the changes to be found in music in the Baroque Era". "What the deuce is the Baroque Era?" the listener may ask. "Well"* begins the student, and embarks upon an instruction process which, while it may not edify the listener, will certainly clarify the ideas of the student, and almost invariably will send the student back to the text to seek clarification of some point not previously understood. An audience, as I have said, can be very helpful here, but if no audience is available, the student can teach an imaginary class. Indeed, for those students whose work entails a lot of driving, a journey can provide tremendous opportunities for giving an overt response to what has been read. I have been very fortunate, as a farmer's wife, to have had precious minutes every day travelling by car to work and back and in fact can remember, as a young teacher shouting Greek declensions at passing cows and sheep as I rode my motor-bike to school.

It would be wrong to conclude without considering the strength that extramural students bring to the process of reading. The most outstanding of these is their attitude and motivation. More than any other students, those who study extramurally are well-disposed towards their work, keen to succeed, and so grateful for help.

Usually they have a degree of maturity and capacity for organisation rarely found in younger school-leaver internal students. Frequently, they lack confidence in themselves, especially if they have been away from formal study from some years. One of the dangers we fall into as tertiary lecturers is the danger of failing to recognise the gap that they imagine exists between them and us. If we can somehow give them confidence in their ability to make sense of the notes we write and the books we recommend, and assume they will succeed, their chances of success are greatly increased. All the research on the effect of teacher expectation on pupil performance seems to me just as relevant for students at a distance as for students in the classroom.

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Student Response To The Presentation Of Advanced Studies For Teachers' Unit Study Guide Material

by John McLellan

John McLellan was a primary school teacher for 14 years. Most of this time was spent in rural areas and for eight of his years teaching he was a school principal. He studied ASTU papers himself and began extra-mural degree papers at Massey University. In 1976 he came to Massey internally to complete his degree and then returned to his school. At the end of 1977 he resigned to continue studying for a Master's degree in Education. He completed his thesis study on student dropout from ASTU courses in 1980 and in the same year was appointed to his present position as a lecturer at the Palmerston North Teachers' College with responsibility for Outpost students.

Because readability as a term can be interpreted in so many ways, it is necessary to define the specific problem of readability in courses offered by the Advanced Studies for Teachers' Unit. Evidence gained from a recent study of Advanced Studies for Teachers' Unit students (McLellan 1980) shows that difficulties in readability do not refer so much to an inability to decipher the printed word or to understand the terms used within a particular subject, but to the writing style of study guides. Where course members consider that study materials are written in a rigid, formalised manner they are less motivated than they would be if the materials offered a more creative approach.

Learning Partnership

The particular nature of correspondence education means that study guides need to recognise the student as a co-partner in the learning process, especially when the students are adult learners who have a great deal of experience in the subjects offered.

People who take Diploma in Teaching courses are adult learners who are able to invest much of their own experience in their studies. Of those who enrolled with the Advanced Studies for Teachers' Unit for Diploma courses in 1979, one in five held positions of leadership in their schools (see Table 1). Findings showed the average age to be 35. Thus many had considerable experience of teaching and were interested in taking advanced study courses to build on what they already knew. But many of these teachers felt that ASTU courses did not allow them the opportunity to use their experiences in their study.

TABLE 1

Designated Teaching Task of A.S.T.U. Respondents in 1979

	Persisters		Withdrawers		Total	
Teacher	356	49%	158	48%	514	49%
Senior Teacher/ Specialist	168	23%	66	20%	234	22%
Deputy Principal/ Principal	134	19%	75	23%	209	20%
Course members who were not teaching	66	9%	31	9%	97	9%
Total	724	100%	330	100%	1054	100%

In this study withdrawers are those compulsorily withdrawn (by beginning of May) or those who voluntarily withdraw during the year.

The Diploma in Teaching courses were first offered by the Correspondence School in 1962. Over the years its role has expanded until now the Advanced Studies for Teachers' Unit is offering extramurally 49 papers covering 22 subjects of interest to people concerned with teaching. The Department of Education's intention is that further expansion and development within the Unit will take place in an effort to offer a greater range of continuing education courses for teachers. Particular emphasis is to be given to the provision of courses for secondary teachers and to tutors involved in the teaching of adults.

Increasing Withdrawals

However over the past six years the rate of withdrawal has increased to the extent that in 1978, 58% of the Advanced Studies for Teachers' Unit students who enrolled for Diploma in Teaching studies withdrew before completion. In order to plan for a more effective correspondence service it was necessary to find out the reasons for this withdrawal problem.

So, prompted by the Department of Education, a study was carried out with every course member who enrolled for Diploma in Teaching courses through the Advanced

Studies for Teachers' Unit in 1979. A questionnaire was prepared and posted to all students seeking information about their Advanced Studies for Teachers' Unit courses. The questionnaire yielded an 80 percent return rate and so provided a high degree of confidence in the results.

It was Roger Boshier (1972) who maintained that so-called 'non-course related reasons' for drop out are often used as a rationalisation for dropping out for 'course related reasons'. This appeared to hold true for respondents in the Advanced Studies for Teachers' Unit study. Over-commitment and personal problems were highly rated as the reasons given for non-completion of courses as shown in Table 2.

However, as answers to other questions on drop out were analysed, patterns began to emerge that pointed to certain 'course related reasons' for withdrawal from Advanced Studies for Teachers' Unit courses. Respondents stated that the way the course was presented did not fit in with the working demands of practising teachers. There was no flexibility in course pacing and no learner control which many teachers considered desirable.

TABLE 2

Reasons Why A.S.T.U. Respondents Withdrew in 1979

1.	Initial school workload	130	(33.7%)
2.	Personal reasons	107	(28.0%)
3.	Change of plans, travel, job, resigned.	47	(12.2%)
4.	Study guides/text books late in arriving.	26	(6.7%)
5.	School difficulties	24	(6.2%)
6.	Course did not match teaching level.	18	(4.7%)
7.	Irrelevant study	18	(4.7%)
8.	Little help from tutor	7	(1.8%)
	Total	377	100%

Correspondence instruction relies heavily on the printed word as a medium of instruction and as a means of communication between student and teacher. One of the reasons for course dissatisfaction was to do with the study guide structure. The first indication of this problem in the way some study guides were written became apparent during the semi-structured group interviews held in the early part of the investigation. Several participants at these interviews stated that some study guides were written in a formal and impersonal style.

Open-ended comments from the mailed questionnaire that followed these interviews suggested that the wording of the study guides was vague and theoretical. Certain areas of study would have been better grouped together in related and discrete units. Respondents stated that they would have preferred to practise the ideas presented through the use of instructional tasks. This would help them to understand the concepts in order to evaluate their effectiveness. Several made the comment that assignment questions did not appear to be linked to study objectives. Other respondents commented about the ambiguity of assignment topics. This confusion because of the imprecise wording of assignment questions only added to their feelings of isolation and loneliness in studying at a distance.

Contributing Factor

Although the problem of writing style and its relationship to course structure did not appear to be the sole reason for giving up the course, it appeared to contribute to the general dissatisfaction of those who withdrew.

TABLE 3

Suggestions from Respondents about Ways of Improving the Effectiveness of A.S.T.U. Courses

1.	Press for an improvement of student-student, tutor-student relationships. Need for inservice seminars and sharing of ideas.	37.6%
2.	Generally satisfied with A.S.T.U. courses.	12.6%
3.	Dissatisfaction over A.S.T.U. study because of inconsistencies.	10.0%
4.	Concern over existing structure of Continuing Teacher Education.	9.9%
5.	The desire for courses to fit teacher needs.	9.7%
6.	Demanding nature of A.S.T.U. study.	9.5%
7.	Slow feedback, lack of communication.	5.8%
8.	A.S.T.U. only provision through which courses are available.	2.6%
9.	A.S.T.U. not encouraged by senior colleages.	2.3%
	Total	100.0%

When asked what changes course members would like to see adopted by the Advanced Studies for Teachers' Unit, the response from many course members was that they wanted to have a greater say in how they should be involved in continuing teacher education. As shown in Table 3 comments ranged from a desire for greater opportunity for a sharing of ideas between student and student and tutor and student to a criticism of the existing course timetable. A significant number of students wanted the Advanced Studies for Teachers' Unit study to fit in more flexibly with the busy times of a teacher's year.

Underpinning the problem of writing style and course structure is the student's desire for a greater freedom to participate in the learning process. An open learning approach might be one solution to this problem. However, there are many different opinions about what constitutes open learning or learner-centred instruction.

Mager (1968) lists certain conditions and consequences which provide for learner-centred instruction. These items are listed as:

- Providing the student with statements of the teacher's instructional objectives which he can understand when he first sees them
- Providing enough signposts so that the student always knows where he is and where he is expected to go
- Detecting what the student already knows and not boring him by teaching him this
- Giving the student some choice in selecting and sequencing of subject matter (especially where the teacher maintains rigid control over the goals of instruction), thus making positive involvement possible
- Providing the student with some control over the length of the instructional periods
- Relating new information to old within the experience of the learner
- Treating the student as a person rather than a number in a faceless mass
- Providing instructional tasks that are relevant to the objective
- Using only those test items relevant to these objectives.

If the Advanced Studies for Teachers' Unit course members felt that their ideas and opinions are valued and that they were being given responsibility for their own learning, a more positive outcome could be expected (i.e. fewer withdrawals).

Open Learning Needed

My contention is that an open learning system that is able to cater for learner needs is within the capabilities of the Advanced Studies for Teachers' Unit. The aim of open learning is towards a freedom of pace and an element of control by the learner over the learning process. This is the kind of openness that Advanced Studies for Teachers' Unit course members want. Once such a philosophy of learning is adopted, and Advanced Studies for Teachers' Unit materials are prepared as an exchange in cooperative learning, motivation will increase and readability of course materials will be significantly improved.

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Summarising The Literature On Readability

by Marianne Tremaine

Marianne Tremaine was a secondary school teacher and an editor for a publishing company before taking up a position at Auckland University's Centre for Continuing Education. She continued to work in adult education at Victoria University's Department of University Extension and then became Research Officer in the Centre for University Extramural Studies at Massey University. She became involved in working on the readability of Massey's extramural study material after finding out about readability research in progress at the Technical Correspondence Institute and deciding that more understanding of readability was important for any distance learning programme.

The reason for calling this paper a summary rather than a 'review' of the literature on readability is that review has connotations of completeness. One imagines the researcher sifting through every available book and journal and developing a comprehensive picture of the previous research.

My purpose was quite different. I was concerned to select bits and pieces from the literature to see whether there was any appropriate way of undertaking readability research at Massey. I was looking for a sound theoretical base and a method of procedure. There seemed no point in becoming involved in readability research unless it was clear that the results would be useful and meaningful.

With this limited goal in mind I began reading the literature. Superficially at any rate, readability seemed a straightforward idea. Some material is able to be read, other material is not and between these two extremes there are obviously degrees of readability. No one would dispute that these differences exist, the difficulty is how to measure them.

At this stage in one's reasoning, attempts to measure readability move into the area of opinion. Individual researchers have different ideas about what it is that makes reading difficult. They have hunted for the ideal formula. All tend to think that their particular notion could be used as a measuring stick. Sentence length, difficult words, the number of syllables and other features of reading material have been counted and weighted according to particular formulas. (Dale-Chall 1948, Flesch 1951).

Formulas Limited

Although these formulas have the advantage of being able to be used in isolation from the reading audience, this is also a disadvantage. An objective measure of readability is limited to a few empirical factors which can be counted and calculated by the researcher and are usually given an equivalence to a notional reading age.

But after this is done, the researcher is left only with the rather minimal knowledge that 'x' selection of reading material scores 21.6 on the Flesch Index while 'y' selection scores 74.8. And of course, these scores are based on the assumption that no matter what the reading material is like, a measurement taking only a few variables into account will be sufficient to assess its readability. As one writer says *"Perhaps the major limitation of the readability formula is that factors within the reader such as his motivation, his familiarity with the topic, his facility with language are not measured."* (Anderson, 1969)

Warwick Elley's noun frequency count overcame some of these problems by refining the method of grading difficult words and by demonstrating that nouns, as the least redundant words in language, could be used as a reliable indicator of reading difficulty. However, because he was concentrating on children's reading material for use in schools, Elley used lists of nouns which were taken from the writing of primary school children. (Elley, 1969) In principle, noun frequency counts could be used for adult material if words were taken from the writing of adults at different ages and lists compiled.

Unfortunately, in spite of the reliability and ease of this method, with university study guides the reading ages would be likely to be over-estimates because words unfamiliar to general readers could well be part of the basic vocabulary of university subjects.

Yet in distance learning in particular, it is necessary for a tutor or lecturer assembling study materials to make at least an implicit judgement about how readable the study material is. And in using teachers and pupils as judges to rank the difficulty of different passages Elley (1969) found that the rankings corresponded very closely with ratings gained from word frequency counts. But using teacher estimates of difficulty is probably more successful in schools where a very similar educational background (and often social background) can be assumed.

Varied Backgrounds

At the university level, students come from very different backgrounds and in extramural study at Massey which draws students from all over New Zealand, there is a lot of variation in the age, education and experience of students. Many Massey lecturers are concerned that, because the ideas they are teaching in study guides are so familiar to them, it is difficult to know whether they are communicating effectively with students. Added to this is the finding in a recent study of reasons why extramural students give up before the end of the year, that the majority gave 'lack of time' as their reason. (Tremaine and Cavanagh, 1979).

Although this can be taken at face value, it could also mean that students did not have time because they had to spend so long trying to understand their reading material. To find out whether reading material was a problem, it was necessary to have a measure of readability which would suit university level reading, take the reader into consideration and enable comparisons to be made between very different types of material.

The most suitable research method seemed to be the 'cloze procedure' introduced in an article by Taylor (1953) as "a new psychological tool for measuring the effectiveness of communication". Taylor explains that the name 'cloze' is derived from 'closure', the term gestalt psychologists give the human tendency to finish an incomplete but familiar pattern. An example is seeing a broken circle as a whole one, or supplying the missing word in an unfinished sentence.

The cloze procedure for assessing readability deletes every 'n'th word from an extract and takes the number of blanks successfully filled in by students as a measure of readability. Obviously this procedure has to be administered directly which is rather laborious, but it has the overwhelming advantage that it is sensitive to the conceptual difficulty of material and to the knowledge and experience of the readers. (Jongsma, 1971) As long as enough words are struck out at random, they will represent the same proportion of nouns and verbs, or other types of words as those in the extract. So the test material is easy to prepare and the method of testing is uncomplicated.

Ranking Unchanged

Test marking could present difficulties if it were necessary to make decisions about acceptable synonyms but Taylor's report of experiments in his 1953 article showed that accepting synonyms rather than exact words made the scores slightly higher but did not change the ranking. Another finding was that with straightforward reading material, the cloze ranking showed a high correlation with the Dale-Chall and Flesch formulas, but when complex or technical material was chosen, the cloze procedure was a far more reliable measure.

Taylor explains the rationale of the cloze procedure by referring to Osgood's learning theory of communication. Osgood talks of the importance in language of 'redundancies' and 'transitional probabilities' which lead to the development of 'dispositional mechanisms' in the way people transmit and receive language communications.

Or as Taylor explains the theory:
"Habits of expression take over most of the work of translating an individual's meaning into an organised series of language symbols for transmission to others. Likewise his habits of reading or listening cause him to anticipate words, almost automatically when he is receiving messages. When he sees the start of a phrase that looks familiar, he immediately tends to complete it in his own way even when the written phrase actually ends differently.

When words come in sequences that best fit the receiving habits of the reader, he understands with little effort. When the symbols appear in less familiar sequences, comprehension is slower and less sure. And sufficiently improbable patterns seem like nonsense; they do not stand for anything in his experience."

And as Taylor stresses later in the article the value and importance of the cloze procedure lies in the fact "that a cloze score appears to be a measure of the aggregate influences of all factors which interact to affect the degree of correspondence between the language patterns of transmitter and receiver."

Several Problems

So this selective, rather than exhaustive summary of the literature on readability, showed that the cloze procedure was the best method of finding out the readability levels of Massey's extramural study material. However, while it seemed the best method to use in assessing university study guides, the cloze procedure presents several problems which are not easily resolved. Only selected papers can be tested when students come to vacation courses. Because the tests are rather laborious and time-consuming to administer, it is not possible to test every student in every paper. As the cloze procedure is a relatively new technique, there are several issues that individuals have to make decisions about for themselves, such as the frequency of the blanks and the interpretation of test scores. In defining the criterion levels for interpreting cloze test performances, Bormuth (1971) has established that a cloze score of 35 percent marks the threshhold of readability and a cloze score of between 50 and 54 percent is a defensible criterion for the independent study level.

So far only part of the Massey readability project has been completed. The results of the tests carried out in 25 papers at the May vacation course showed that about 30 percent of all the students tested were reading at the independent level (with scores of 50 percent and above), 53 percent were reading at the instructional level with scores between 36 and 49 percent (in other words they would benefit from further explanation of some points) and 17 percent were reading at the frustration level with scores of 35 percent or less and could not understand their study material sufficiently to learn from it. These criterion levels give a descriptive measurement of the results, but of course cannot explain the reasons for these results. Further tests will be carried out in August and then the results will be correlated with information from a brief questionnaire which students filled out in the testing sessions. When all this information is available, it will be possible to give lecturers more assistance in isolating some of the reasons why students have difficulty in reading study material.

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Readability Formulas And When To Use Them

by Graham Wagner

Graham Wagner has a background of primary and secondary teaching, some years in the education service of the air force and three years in the secondary division of Christchurch Teachers' College. He was supervisor of the Advanced Studies for Teachers' Unit before taking up his present position as senior research officer in NZCER, leading a programme of research and advisory work in adult learning and continuing education. He is currently involved in curriculum evaluation, readability of distance learning study materials, training needs analysis in clerical trades, youth unemployment and the evaluation of retraining programmes.
(An extended version of this article appears in set 1981 No. 1, Wellington, NZCER and ACER).

Once it has been established that an editor, teacher or writer cannot (for a number of reasons) 'trial' written material on students to determine if it's readable and understandable, then a readability formula can be a useful substitute. Readability formulas predict the likelihood that a selected extract or paragraph can be understood by a criterion population and results are usually interpreted in terms of reading grade levels (usually USA norms).

Which Readability Formula?

In general, readability formulas are based upon regression equations which take into consideration such variables as number of syllables, sentence length and the number of difficult or unfamiliar words. Calculating a readability index is not an easy procedure unless a calculator is handy. Nowadays, formulas like the Dale-Chall and Flesch are available as computer programs which makes the process of calculating indices for a large number of extracts a rapid and comparatively simple process. More is said about the use of computer programs later in this paper.

With literally over 100 formulas to pick from (Klare, 1974/75) which one is the writer, editor or teacher to use? Two major criteria for selection were put forward some time ago by Klare (1963):

1. The predictive accuracy of the formula; and
2. The speed with which an answer can be obtained.

Other related criteria which should be taken into consideration are:

3. Range of applicability (usefulness for children and/or adult reading material);
4. Ability to measure level of abstraction and difficulty of ideas rather than mere style difficulty;
5. Usefulness of assessing reading materials not in contextual form (e.g. tests and questionnaires).

Klare makes the point that because of the exclusiveness of the above criteria it is impossible to designate one best formula. This is due, by and large, to the lack of research data about some of the formulas. Therefore, he says, "..... only general suggestions can be safely made" (p 22).

Klare's suggestions, which apply to formulas intended for *adult* material, are as follows:

(a) *The most accurate formula:* the Dale-Chall (1948) is consistently more accurate than others in comparisons, though sometimes only slightly so. The user may wish to consider the recalculated version of the formula devised by Powers, Sumner, and Kearl (1958) but the added predictive accuracy is probably not very great. (See also Holmquist, 1968).

(b) *The fastest formula to apply:* the Farr-Jenkins-Paterson (1949) simplification of the Flesch Reading Ease formula is probably the fastest, though formulas like Robert Gunning's (1968) Fog Index have not been thoroughly evaluated. The Farr-Jenkins-Paterson (1951) version is slightly less accurate than the Flesch Reading Ease formula, but the user who wants a "fast" formula that will give rough results may well choose it. (See also "Mugford Readability Chart", 1970)

(c) *The most popular formula:* the Flesch Reading Ease formula, is a compromise choice between the Dale-Chall and Farr-Jenkins-Paterson formulas, and has the advantage of being the one most often used and the one on which the most research data are available. (See Tretiak, 1969)

(d) *A formula for noncontextual materials:* the Forbes-Cottle formula is useful for psychological tests and inventories. (See Klare, 1963)

Limitations of Formulas

There are some writers (Blair, 1971), (Otto and Smith, 1971), (Carozzi, 1972) who have pointed out the limitations of readability formulas. Generally, it is the uncritical use of formulas that has led to their misuse, mainly because teachers and publishers have tended to use formulas as if they were precise measures of reading comprehension (Carozzi, 1972). Hence, it is important to be aware of their limitations and alert to what they cannot do.

Limitations of formulas are:

(1) *Formulas measure only one aspect of writing-style*
They only indirectly touch on the content, but say nothing about organisation, word order, format or imagery. They do not take into account the motivation, previous experience, and intelligence of readers.

(2) *Formulas measure only one aspect of style-difficulty*
They do not measure a writer's dramatic effectiveness or ability to create a mood.

(3) *Formulas do not even measure difficulty perfectly*
They are seldom accurate to (or even within) one grade-level. Further they are prone to sampling and application errors.

(4) *Formulas are not measures of good style*
Poor writing may be quite readable according to a formula score and this information wouldn't help the writer to improve his writing.

In summary, although style is only one characteristic of a piece of prose, it is an important one in terms of its relationship to reading speed, acceptability, understanding and learning. Klare (1963) puts the case for formulas when he says: "If formulas are thought of as efficient predictors of difficulty, more accurate in prediction than individual writers most of the time, that is all that should be expected" (p.25). Therefore a readability index is a useful starting point for a writer in editing his work. Later, when the work is nearing its final form it should be directly tested on a sample of his reading population, preferably using the 'cloze' procedure. Only in special circumstances should readability formulas be used as substitutes for other more direct forms of measuring reading comprehension.

Using Computer Programs

Recently (through its own computer terminal), NZCER has had the use of a computer program to calculate Flesch Reading Ease Scores. The program called STAR is especially useful for working with technical materials. It was written for General Motors in the USA and has the following advantages:

1. It cuts out the manual counting of words, sentences and syllables.
2. It can be used by anyone with access to a common computer system. Knowledge of the theory is not needed, and the only skill required is the ability to type plain text on to the computer.

In using STAR the following information is provided:

- number of sentences
- number of words
- number of syllables
- average sentence length
- average number of syllables per word
- Flesch index (*)
- grade level equivalent (derived from Flesch index)

(*) The Flesch Index is based on a scale of 0 to 100. The higher the Index, the more readable the writing.

To demonstrate the way STAR can help in improving technical material the STAR manual provides this example:

AGM Service

The original passage read like this:
The comfortron system automatically controls the heating and air conditioning in the automobile so that a constant interior temperature is maintained regardless of outside temperature conditions. In hot weather it will cool the car rapidly to the pre-set comfort level and then regulate cooling to whatever degree is required to maintain constant comfort. In mild weather the interior of the car remains comfortable without having to reset the controls. In cold weather the system will heat the car quickly to the desired temperature then level-out to maintain the pre-set comfort level desired by the passengers. The following paragraphs contain a

brief description of the components of the comfortron system.

High Cal Words

The high cal words (words of three syllables or more) in the passage are listed by the computer as shown below. The numbers alongside a word indicate how many syllables are in the word.

3	comfortron
6	automatically
4	conditioning
5	automobile
3	interior
4	temperature
3	regardless
4	temperature
3	conditions
3	rapidly
3	regulate
3	whatever
3	interior
4	comfortable
4	temperature
3	level-out
3	passengers
3	following
3	paragraphs
3	description
3	components
3	comfortron

Number of sentences = 5
Number of Words = 109
Number of Syllables = 196
Average Sentence Length = 21.8
Average Syllables per Word = 1.8
Flesch Index = 32.6
Grade Level Equivalent = 16.1

With the information STAR provided, the passage was made more readable:

The comfortron system automatically controls the heating and cooling of the air inside the car. It keeps the inside air at a fixed temperature regardless of the outside air temperature. In hot weather it will cool the inside air to a pre-set level and then keep that cooling level. In mild weather the inside air remains comfortable without having to reset the controls. In cold weather the system will heat the inside air quickly to the pre-set temperature then level out. The following sections describe the comfortron system components.

3	comfortron
6	automatically
4	temperature
3	regardless
4	temperature
4	comfortable
4	temperature
3	following
3	comfortron
3	components

Number of Sentences = 6
Number of Words = 89

Number of Syllables = 145

Average Sentence Length = 14.8

Average Syllables per Word = 1.6

Flesch Index = 53.9

Grade Level Equivalent = 11.7

In using STAR at NZCER we have found it to be a source of useful information for improving text. Some colleagues have taken advantage of this program and our facilities from time to time to assess the readability of training materials and we expect more collaboration with other writers, researchers, teachers and editors in the future. Recently, doubts have been raised about the justification for using the McCall-Crabbs tests as a criterion measure in validating some readability formulas (Stevens, 1980). However, until proved otherwise readability formulas still appear to make useful contributions to clearer, more readable writing.

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Measuring The Readability Of School Text Books

by Lois Templer

Lois Templer has been a primary school teacher from 1953 until 1970. She has been a secondary school reading teacher since 1970, first in Wellington, but has been on the staff of Howick College in Auckland since 1974. She is vice-president of the Auckland Council of the International Reading Association and tutors for Reading Certificate Courses at the Arney Road Teachers' Centre. She has also worked with Heinemann Educational Books developing cloze tests to be included in school textbooks. In August 1980 she gave a paper on Readability at the World Congress on Reading in Manila. At present she is also an extramural student at Massey taking papers for a Bachelor in Education.

This paper is based on my ten years' experience as a Reading Teacher in secondary schools. My teaching experience made me fully aware of the need to match children and books for the successful teaching of reading. The problems faced by secondary school teachers and students in using set texts with mixed ability classes soon became obvious to me. I believed there were some solutions, but to prove my conviction that such problems did exist I initially conducted an informal survey of third form students. This survey of 7,941 pupils and their performance on PAT in Reading Comprehension indicated that 38 percent had a reading age below 13 years. This meant that at least one third of pupils entering secondary school would have great difficulty in reading their text books (Templer, 1974).

Promoting Awareness

I then concentrated on readability formulas and the cloze technique to promote in teachers an awareness of the difficult reading level of the books they used for teaching purposes. I have based my experimental work on research carried out in New Zealand and overseas. Through experimentation in my own school and in some other Auckland High Schools I have developed a valid and reliable procedure for using the Cloze Test so that secondary school teachers can assess the readability of text and resource books.

Defining Readability

> *"In the broadest sense, readability is the sum total (including interactions) of all those elements within a given piece of printed material that affect the success which a group of readers have with it. The success is the extent to which they understand it, read it at optimum speed and find it interesting."*
>
> *Dale-Chall, 1948*

In relating the printed material to the success with which it is read, this quotation stresses important aspects of the reading process: comprehension, fluency and interest. When discussing readability, one must never lose sight of what is involved in the act of reading. The reader, as well as the printed material, must be considered.

To achieve success in reading, it is necessary to understand words and phrases and relate ideas to one's own experiences, to cope with the perceptual aspects of decoding print and read with ease, and to be motivated to read through one's own interest in the topic. All these basic skills are necessary for comprehension. The general aim in any teaching which utilises books for instruction must surely be to match the reader and the printed material so that the reading may be informative.

These then, are some of the factors affecting readability:

- Visibility of print (type, line-spacing, general lay-out)
- Words (content, function, word frequency in speech and in text, number of syllables)
- Sentences (discrepancies between frequencies of sentence patterns in speech and print which may influence difficulty level)
- Beyond the sentence (comparing long sentence units with long reading passages)
- Interest and motivation
- Reader's language and relevant experience.

All these must be considered when measuring or predicting readability.

Predicting Readability

Readability formulae, of which there are many, give an objective assessment of printed material. Because they concentrate on word length, word frequency, sentence length, and/or the number of syllables, and ignore the reader's interest, motivation, experience and knowledge, they are of limited use. "Measuring vocabulary and sentence length is like measuring the legs and arms of a weightlifter and predicting what he can lift." (Smith, 1978). However, especially when used with other measures (e.g. cloze procedure) they are of value in 'sensitising' teachers to readability, and to the importance of matching readers and books.

The results produced when using several formulae to assess the same book can cause confusion and distrust of what are actually valid methods of evaluation. The Elley Noun Count is appropriate for standard prose but as it is a vocabulary check only, it can be highly misleading if used with high school material (Elley, 1975) See Table 1. Having decided on a specific formula it is best to use it consistently because as the table shows the ranking within each formula is very similar, though the reading age levels differ.

TABLE 1

Comparative Reading Age Level Results of Three Reading Formulae

Book	Formulae		
	Elley Noun Count	Fry	SMOG
Science for Seventies Bk. 2 (Form 4 text)	10-12	12-14	16-18
Towards Tomorrow (Form 4 Home Economics text)	12-14	13-15	16-18
The People of Israel (Form 4 Social Studies Resource Book)	12-14	13-15	16-18
Graded Basal Reader U.S. Grade 8 (8 + 5 = 13)	10-12	12-14	14-16

To assess books for a specific purpose, such as a large purchase, an evaluation check list should be used to supplement the formula (See Appendix 1). A prominently displayed chart, listing text and resource books with their respective reading levels and comments, is a useful reference for teachers in every subject area. But it must be regarded as a guideline only.

Cloze Procedure

When a class begins a new topic involving the use of a specific book for instruction, an informal cloze test of that book may be prepared and administered. The results of the cloze test reflect the total language abilities of the reader in the following ways; familiarity with sentence structure, familiarity with context clues, familiarity with vocabulary used by the author, and the ability to draw inferences from written prose.

Cloze tests are a valid and consistent index of reading comprehension, and can be used to predict and assess difficulty for a wide range of reading abilities. There are three ways in which the cloze procedure can be used:

1. Standardised cloze tests, e.g. GAP (1965) and GAPADOL (1972) can be used to identify students' retarded or superior reading ability.
2. Informal standard cloze tests are used for research and diagnostic purposes, such as predicting and assessing readability. The structure of deletions should be internally consistent i.e. every 'n'th word should be deleted in a regular pattern.
3. The controlled cloze test can be constructed according to what is to be measured. Deletions may be structural or lexical, the nature and frequency of the blanks may be altered and clues may be given.

The informal standard cloze test of readability provides an approximation of students' ability to read selected material, but is valid and reliable only if constructed, administered and scored according to precise rules which are consistently applied. It should not replace a teacher's carefully considered professional judgement of a student's reading ability, any more than any other test; nor should it be confused with a cloze test of reading comprehension in general. For the latter purpose, use the controlled cloze procedure.

Guidelines have been prepared to help those teachers interested in the cloze procedure, who lack the information to construct tests and use them correctly. The following guidelines set out the procedure for constructing, administering and scoring cloze tests for measuring the readability of specific texts:

1. Select two representative passages from the book. Allow for deletion of 25 words in each passage with one sentence unmutilated at the beginning and at the end of the passage.

2. Delete words to a regular pattern, no less than every fifth and no more than every tenth word. Replace deleted words with blanks of uniform length (3cm for elite type). If no practice form is used before the test, print in the first two replacement words as an example of the response required. (A practice form must be short and simple, and may be done orally).

3. The proportion of nouns deleted must be approximately equal to one fifth of the total number of nouns in the passage, e.g. 20 nouns in the passage: 4 (+ or - 1) deleted. (Elley, 1977) Do not delete proper nouns or numerals unless they can be deduced from context. Contracted or hyphenated words count as one word. Retain all punctuation.

4. Students fill in each blank with exact missing word (one only) which has been deleted. They should read the passage through before attempting replacement. Allow sufficient time to complete.

5. Count correct responses, including the first two even if they have been used as an example. Spelling mistakes are not counted wrong answers. Synonyms however are not acceptable.

6. Convert correct responses to percentage.

7. Compare accuracy with the following criteria:*

Independent Reading Level:	60% and above
Instructional Reading Level:	40% - 59%
Frustration Reading Level:	Below 40%

(Pack, 1973; Silvaroli, 1973)

OR

Above 45%:	material is readable for student
45% and below:	material will be too difficult

(Elley, 1976)

* *(Editors Note: These differ from Bormuth's levels in his 1968 and 1971 articles (see references on page 23) but Mrs Templer goes on to explain her reasons for adopting these criteria in the context of school reading.)*

8. Independent Reading Level means that the student will be able to comprehend the material without assistance.

   Instructional Reading Level means that the student will need assistance to get meaning from the material.

   A Selective reading guide is recommended, e.g. "Read to find out ..." what you want the student to get from the reading. (Journal of Reading, Feb. 1975) See Appendix 2.

   Frustration Reading Level: It would be better to find an easier book. If this is not possible, individual assistance should be given and the content carefully explained. Adjust any written questions or assignments to the level of the student's reading ability.

My choice of criteria for converting cloze scores to equivalent reading levels is based not only on research but on practical experience. For my purpose, that of establishing reading ability groups in relation to the reading of a specific book, the criteria must relate to the needs of the teachers who use them. It is better that only the very able students are grouped

as "independent" readers. These students will be expected to cope with difficult assignments without teacher guidance on the basis of the test results. Secondary school teachers tend to overestimate the reading abilities of their students but limiting the number of independent readers allows for this.

As the cloze test assesses, in part, the student's ability to infer from context the words which have been deleted, a selection in which the context does not logically imply particular words should not be used. The material should present key ideas and concepts, not easier examples of key ideas. (Burron, 1974)

Accepting Synonyms

Research indicates that there is very little difference in rank results when synonyms are accepted rather than exact replacements. Better readers tend to score slightly higher in relation to poorer readers when synonyms are counted (Elley, 1976). This is a contentious issue about which many teachers will argue. I find that my only convincing response is to show samples of comparative scores for the respective books. I also point out that if synonyms are counted, reading levels in relation to the scores should change, e.g.

Independent reading level: 66% and above
Instructional reading level: 40% - 65%
Frustration reading level will remain the same.
(Pack, 1973; Silvaroli, 1973)

Alternatively, the clozentropy technique may be used. A count of items that are consistent in frequency and meaning with the responses of other members of the particular reading population can provide teachers with valuable information as to how the students can or cannot determine the author's message because of the factors within their common linguistic or informational experiences. (Hittelman, 1978)

I will give a simple example of this rather ponderous explanation. In a cloze test on a Home Economics book of British origin, the word "cooker" was deleted. The context made it obvious that the replacement word would, in New Zealand terms, be "oven". When 75% or more of those tested used the word "oven" as the replacement, it was accepted as correct. The word "cooker" is unfamiliar to New Zealand students, and therefore the more usual term "oven" can be accepted because of its general usage.

In a monograph entitled "The Problem of Readability" Warwick Elley (1975) says of the cloze test, "It is simple to prepare and easy for the students to take." I would respectfully disagree with him in regard to the simplicity of preparation. Finding representative passages which present key ideas and concepts, and deleting the correct number of nouns can be an exacting task. For this reason, although I prefer every 7th word deletion, it is the printed material which dictates the most acceptable pattern of deletions.

Using the Cloze Tests

At the beginning of the year, I run cloze tests with all third formers, using the Social Studies book each class has for their first topic. Thus, before the standardised reading test results are available, or even the primary school record cards, subject teachers know of possible groupings, students who may have reading difficulties and the more able students. As a reading teacher I have an early indication of probable slow-progress pupils and can begin individual testing. The subject teacher marks the tests, and thus learns firsthand of pupils' abilities and difficulties in using vocabulary, context, grammar and inference skills.

Cloze tests are given on request in any subject, (excluding Mathematics). The effect has been far-reaching and has lead to a greater awareness of the level of difficulty of text and resource books. In Science, for instance, the third and fourth form text book is now used only for reference and occasional exercises.

Textbooks Still Needed

Where texts are too difficult, most teachers have written their own material at a level suitable for those they teach. They have not rewritten the text book material. There is a significant difference. However, at one stage, teachers were prepared to forego the use of the texts altogether, at least in the lower classes. I then had to convince them that that was not the answer. Students must be taught to handle reading material. A better solution lay in teaching methods that stressed vocabulary and concepts, and if teaching was carried out in the right way every student, even if slow at reading, could read some of the text if he was shown how to do so.

John Gilliland in his monograph "Readability" (1972) suggested that if a cloze test was included in the front or the back of a book, even as a separate pamphlet for students to complete, the publishers could give teachers a quick and reliable means of assessing the suitability of reading material for the particular students for which it is intended. Elley (1975) echoed that suggestion, saying "In an ideal world, the publisher should prepare such tests for potential readers, and enclose them inside the jacket cover, or send them out with publicity blurbs." In 1977 I was approached by Heinemann Educational Books to construct cloze tests to be issued with their New Zealand publications. There were restrictions which made the task difficult. For instance, there could be no practice form, and the instructions for using the test had to be as brief as possible. I believed in the idea, and accepted the invitation, but made it clear that publicity was necessary if teachers were to make use of the tests. I constructed tests for four books, but Heinemanns are disappointed with the lack of response from teachers. For the firm, it is more of a service than a profitable venture but I still believe that with more publicity and salesmanship the idea would have caught on.

Nevertheless, whatever the books, circumstances or the methods used to assess readability, it should not be seen as something fixed or static. When we think in terms of instructional purposes, readability is ever-changing. As Ruth Trevor said, "The child is the best judge of difficulty." (1972) We must not rely solely upon some artificial and arbitrary means of classifying reading materials. We must never eliminate the reader from our concept of readability.

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APPENDIX 1

Considerations in Evaluating Textbooks

1. The density of concepts isn't intended to frustrate the student. In other words, each sentence isn't packed with several ideas.
2. The sentence complexity isn't usually high. That is, the authors don't tend to always use long compound and complex sentences.
3. The authors don't continually choose to use long, difficult words when simpler synonyms would suffice.
4. Captions under graphs, tables and diagrams are clearly written.
5. The text contains both a table of contents and an index.
6. The table of contents shows a logical development of the subject matter.
7. When the text refers to a graph, table or diagram. that aid is on the same page as the textual reference.
8. Pictures are in colour and are contemporary, not dated by dress unless the author's intention is to

portray a certain period.

9. Difficult new vocabulary words are highlighted, italicised, or underlined.
10. The main idea or purpose for reading a chapter is stated at the beginning.
11. The authors include a summary at the end of each chapter.
12. Various ethnic groups and male and female characters, are depicted authentically in the text.
13. When there are questions at the end of the chapter, there are different kinds (true-false, multiple choice, essay), and they are at different levels of comprehension (literal, interpretive and application).
14. At times the text refers to practical, real life situations students can relate to and have an interest in.
15. The text includes quotations from other sources and authorities to support its statements.
16. The text suggests other out-of-class readings and projects to stimulate additional student interest.
17. The book is recently copyrighted (within the last two years) and the contents genuinely up-to-date.
18. The text is suitable for achieving the stated course objectives.

The first consideration in evaluating a new textbook should be its numerical readability level. Unfortunately often little else is brought into the book's evaluation besides that calculation and some teacher's personal preferences. To these we should add a brisk check against a specific list of characteristics that make a textbook more useable.

To use the above checklist, place a check before each statement that is true of the book being evaluated. Total up the number of items checked. If the text rates from 15 to 18, it would probably be an excellent selection. If it rates 12 to 14, it might be an acceptable choice, but you might look around for something better. If the text rated below 12, you *must* do some more serious searching.

After you establish the textbook's readability level and characteristics in this checklist, have at least two other department members apply the checklist. If all concur, you have what should be the best possible choice.

Obviously, the nature of some textbooks is such that not all the criteria listed could apply. However, this rating system is valid more often than not.

It should be remembered that readability formulas and the criteria mentioned do not take into consideration important factors like the ingenuity of the teacher who will use the textbook, the supplementary materials that may be available, or the reader's interest, motivation and reading ability. Only the teacher who knows the class and the teaching context can make these particular judgements. But the evaluation criteria and the application of formulas can give valuable basic information to weigh against personal knowledge of the teaching situation.

Adapted from "Journal of Reading"
December 1976
Lois Templer

APPENDIX 2

Selective Reading Guide

This is a workable guidance technique that enables students to use their textbooks more efficiently.

Most content teachers agree that not all portions of assigned reading are of equal importance. Hence, as teachers they are selective. As sophisticated learners, they know how to read selectively; how to distinguish key ideas from supportive evidence; major points from minor points.

Many students lack this sophistication. Many read every passage, every chapter, in monotone. All words, all phrases, all paragraphs are of equal importance - or none at all. In their struggle to read without a definite purpose, their minds wander, concentration wanes, and frustration sets in from lack of comprehension. Only the most masochistic of students will continue such an activity very long.

Two things are clear. First, teachers realise what the important parts of any reading assignment are and how to find them. Second, many students do not. If teachers are truly to guide students in the systematic attack on printed material, they must often construct methods which guide the process even as the student is involved in that process. And, since teachers literally "know" the method and practice it, their task becomes the creation of a step-by-step format for modelling their own appropriate behaviours.

The Teacher:

1. Determines overall purpose for particular assignment.
2. Selects those sections of the reading which are necessary to achieve this purpose. Most important (and often most difficult) eliminates from the assignment any and all sections that are irrelevant to the purpose.
3. For those relevant sections that remain, determines what a student must operationally do to achieve the purpose - step by step, section by section.

The Student:

The student is helped to process those major points, concepts,and supportive facts that are found in each relevant section. In addition, if the relevant sections include such aids as major headings and sub-headings, the means of using such headings efficiently are pointed out. The student is not only told exactly what to look for but specifically what to do with it when he finds it.

Examples:

Page 257, par. 3:
The last sentence of this paragraph states the main idea of the entire chapter. Change the main idea into a question.

Page 61, par. 3 & 4:
These two paragraphs describe (a) what the people of this area were up to, and (b) why they chose this particular spot. Do not read further until you are sure of these two points.

Page 42, par. 1:
The question that is raised at the end of paragraph 1 will be answered in the remainder of this reading. State this question in your own words before reading further.

Page 65, par. 2:
Before attempting to read this paragraph, turn back to page 63 and reread the last paragraph. Does what you read on page 65 give you the facts necessary to solve the problem raised back on page 63? Work with your lab. partner to solve the problem. When you think you have the answer, come to me and explain what you did.

Throughout the Reading Guide the students receive guidance that helps them develop a flexibility of reading rate, while at the same time helping to avoid wasting their time on material of little importance.

Examples of This Type of Guidance:

Page 16, par. 1:
Read this paragraph quickly in order to get the sense of what is going on.

Page 69, par. 3:
Before reading this paragraph, write down in two sentences what you did in Chapter 1 (don't look back - remember!). Now look at Figure 4.8 and then back to Figure 1.1. Now, do not bother to read the paragraph.

Page 44, par. 3 & 4:
This material is interesting but not essential for understanding. You may read quickly or skip entirely if you wish.

Page 66:
Slow down and read this entire page very carefully. It describes the living area in detail. When you have finished the reading, draw the living space as you imagine it in the space provided below.

Page 75, par. 3:
This paragraph summarises the entire reading selection. Read it slowly. If there is anything you do not understand in this paragraph, go back to the reading and check it over carefully. Ask me if anything still bothers you.

When finished, the Selective Reading Guide resembles a reading road map. Its purpose is to get a student safely to his destination, which in this case is understanding of the content. The 'map' includes helpful road signs such as "Slow down", "Watch for the main idea here", "Read to find the six examples"; points of interest such as "Notice the analogy that the author uses here", "How does this compare with what you read on page 35?", and even detours such as "Skim these pages quickly", "Avoid this section entirely".

The Selective Reading Guide has been used with students in Form 1 through to Form 7, in all content areas. Two favourable results have been observed.

1. A model for purposeful ongoing reading results in comprehension with guidance, followed later by continued comprehension without such guidance.
2. Students who, up until this point, had met little beyond frustration in their reading efforts have achieved the success necessary to continue their efforts in content reading.

It comes as close to individual attention as we can get.

Adapted from an article in
"Journal of Reading"
February 1975
Lois Templer

PART TWO

The Cloze Procedure

Several of the papers presented at the conference examined different aspects of the cloze procedure in some detail. Diana McRae and Felicity O'Connor's paper gives their personal experiences in preparing cloze materials and administering these tests at Massey University.

Graham Wagner discusses ways of varying the blank spaces when using the cloze procedure and Marianne Tremaine deals with ways of gathering background information on the reading material, particularly the students' perception of the material, so that cloze results can be interpreted and understood within a broader context.

In her paper Nola Holmes takes the cloze procedure a stage further by explaining ways that she has used the results from cloze testing to help tutors at the Technical Correspondence Institute improve their study guides.

Applying The Cloze Procedure In Practice

by Diana McRae and Felicity O'Connor

Diana McRae spent two years taking a Diploma course at the Home Science School in Otago and then taught in the Hawkes Bay area for a term as an uncertificated teacher before training at Primary Teachers' College in Auckland. After qualifying she went overseas for a year, then returned to New Zealand and taught for two years.

Felicity O'Connor has been a student at Massey University, has travelled and taught in New Guinea and has worked in the educational department of a booksellers. At present she is helping with the data processing of results from the Readability Project. She and Diana have been working together as Research Assistants at the Centre for University Extramural Studies.

This paper is concerned with the practical aspects of carrying out the cloze procedure, the need to communicate with teaching staff and the problems of preparing test materials and conducting tests. Because we had no experience of this particular method and had not even heard of the term readability beforehand, we were assured that (uninhibited by prior knowledge) we were in an ideal situation to write this paper.

Our first task was to gain some background on the cloze procedure by reading several articles. Nevertheless it was not until we carried out a cloze test that we understood the procedure and realised some of the problems in setting up this kind of research project.

For the first three weeks or so, we worked through current study guides for each of the extramural courses, attempting to gain a subjective idea of how readable they were. We used Fog Index[*] tests of typical passages to analyse sentence length, the number of words per sentence and the number of difficult or technical words. The final scores gave reading levels ranging from 10 to 47.

[*] *For further information consult: Gunning, Robert. The Technique of Clear Writing, New York: McGraw-Hill, 1968.*

As the highest grade on the Fog Index is 17, the reading level of a college graduate (Time and Newsweek are 11 on the Fog Index), the scores from 18 to 47 gave little information on the readability of study material. However the scores were useful in helping to select a test sample of courses for carrying out the cloze tests.

Selecting Papers for Testing

Limited time and manpower made it impossible to test every paper at its vacation course, so the selection was made on the basis of Fog Index scores, withdrawal rates in 1978 and 1979 and an attempt to cover a representative range of subjects at the one, two and three hundred level. In all 25 courses were chosen for the two week vacation course period in May and 15 for the one week of vacation courses in August. These included 17 Business Studies papers, five Science, two Agriculture and Horticulture, 16 Humanities and 30 Social Science papers. As the vacation course is the only time that extramural students come on to the campus all the testing had to be carried out during a very limited space of time. Some papers such as Mathematics and Computer Science had to be omitted because they were not suitable for the cloze procedure.

Visiting Staff

We needed advice from lecturers on the parts of the course which had not yet been posted to students, the sections of the study guides which were unsuitable for testing and times during the vacation course when tests could be carried out. We first wrote a letter explaining the cloze procedure and the aims of our research which we sent to all the lecturers taking courses we had chosen. After a week we approached these lecturers and explained to them what we wanted to do. We were slightly apprehensive about the response we might receive and to what extent we might have to defend the readability project. We were perhaps fortunate in that many lecturers had read our sheet thoroughly, and had given it a certain amount of thought. Overall there was a mixed reaction. The type of response from staff fell into three categories:-

1. Those who were interested.
2. Those who were not interested but nevertheless prepared to give us time to carry out the experiment and survey with very little discussion.
3. Those who argued over the relevance of readability to their particular course and were unwilling to give time to an experiment.

Those who were interested expressed the views that:- 'It would be very useful as it hadn't been done before. There was a definite need for the evaluation of study guide material. They were very aware of difficulties students have when interpreting some material - they had tried to make their own evaluation and/or questionnaire to gauge this, but limited time and pressure was against them. They were also very interested in the feedback from the students in their own course.'

Those lecturers who expressed disapproval raised these points:-

1. If we found out anything, how would we convince lecturers of our results.
2. How would lecturers find the time to rewrite their study guides.
3. Some courses are designed to be difficult. A high standard is set and a high pass rate achieved, thus readability wouldn't apply to them.

Most lecturers were very helpful and discussed their course structure with us. Some lecturers however, could not fit our exercise into their schedule which was very tightly organised and this was regrettable. We also had some difficulty trying to obtain material that students wouldn't have seen by the May vacation courses. This was important, as an accurate measure of readability could not be gained if students had already studied or seen the material. All students would have an equal chance in the test because of this, yet they would also be conversant with the terms and expressions used in their course. In come cases, the only material available was a study guide lecturers were currently writing. However we did receive all the information on time.

Explaining the Project

It was decided to place an explanatory news item in the university newsletter explaining the research and inviting anyone interested in further information to contact the Centre. This led to discussions with several staff members interested in readability and some publicity from the local radio station.

Once the study materials were available, they were divided into equal sections and extracts for cloze testing were chosen using random numbers, so that any part of the study guide would have an equal chance of being chosen.

Constructing Cloze Tests

The tests consisted of five passages, four from the course study material and a fifth from the University Calendar which was given to all the groups as a control i.e. a standard measure to see how well or badly each group did in comparison with passages from their own paper, and with students in other papers. In each passage, every seventh word after the first 14 words was deleted (excluding proper nouns and numbers, and including hyphenated words). Each passage had 25 blanks; the total score from all four passages gave us a percentage score and the standard passage was treated separately.

We set about constructing an introductory page, which explained the method of the cloze procedure to students and contained a trial passage. A short questionnaire was included after the five passages. We chose two internal groups to whom we could give our test and questionnaire. Both the lecturers in the courses were very interested in what we were trying to do and kindly volunteered their classes. These two tests were extremely useful in that they gave us experience in the cloze procedure, the length of time it took, the attitudes of students we were to encounter and it also helped in revising the questionnaire so that the questions were brief and relevant.

One of the most useful outcomes of pilot testing was the discovery of the effect the tests had on students. They treated the exercise as though it were an exam testing their capabilities and became very anxious about it. One student even expressed the desire to do it again as he felt he had done very badly and was extremely upset. Students were not prepared for the level of difficulty and some became quite frustrated and could not see the point of the exercise. Obviously, our spoken and written introduction needed to explain much more about the readability project to them.

We reconstructed the introductory page and followed the questionnaire with a more comprehensive explanation of our research. We incorporated the idea of the jargon generator to help explain the need for the exercise and also to provide a light-hearted and humorous approach, in an attempt to relieve some of the tension experienced by students. Because it was so important that the right kind of atmosphere should be established in introducing the test, we also decided that it was not a good idea to have other people involved in carrying out the cloze procedure as originally planned. Even although this put a limit on the number of tests we could do, it meant that all tests would be carried out under very similar conditions with a very similar introduction, which seemed much better from an experimental point-of-view.

The test materials given to the students consisted of eight pages. The first page had an explanation of the cloze procedure contained in a short trial passage so that the students could familiarise themselves with the procedure before beginning the extracts from their course material. The second to fifth pages were passages taken from the course, each with 25 word deletions. The sixth page had the piece from the University Calendar, with only 20 word deletions, which we gave to all the groups. The seventh and eighth pages contained a brief questionnaire.

After completing the questionnaire the students could read a light-hearted two-page explanation of our research aims, which they could keep. This included a diagram of what we called a 'jargon-generator', and invited the students to contribute their versions of this 'beastie' on the space provided. The incentive was eleven plastic paper clips in assorted colours for the most original.

Organising and Collating Material

After having chosen the material we set about getting each of the four passages typed onto stencils and printed. This was a fairly lengthy process because of the number of stencils involved; 104 in all for the May vacation course. We had to anticipate the number of students in each of the optional courses (by using lecturer's advice and past attendance records), and as it turned out we always had more tests than the number of students in each course. The pages common to all tests, the introductory page, the University Act, the two pages of questionnaire and the two pages of our 'jargon-generator' were printed at the university printery.

Collating the test materials took a surprising length of time. It was important not to mix up the order of the pages (and passages) and not to miss out any page or repeat any. In spite of this care, one or two mistakes occurred but were able to be remedied.

Carrying Out The Tests

For most of the tests there were at least two people involved, one handing out material and the other introducing the procedure. We stated that this exercise was voluntary, and in spite of this very few students left. This introduction generally took five minutes and consisted of: a brief explanation of the readability research and aims; an explanation of the method which led students into attempting the trial passage after which the missing words from the trial passage were read out. On average, a third of the students in all the groups managed to get half the deleted words correct in the trial passage.

The students were then left to complete the exercise at their own pace. In each course, the students worked at a similar pace and a fairly standard time of 20 to 30 minutes was needed by most groups, slightly longer for larger groups of over 100 students. We were doubtful beforehand about the time factor, as it was important for our results that students complete the whole task. Some lecturers had only been able to give 30 minutes for this from their course programme but as it turned out, nearly everyone had the opportunity to complete the exercise.

Most of the lecturers stayed for the test because they were interested. Lecturers who were favourably disposed towards the project prepared their classes beforehand and this generated a more relaxed and positive response from their groups. We also found that the time of day affected the response from the students. Those who sat the test in late morning or late afternoon showed signs of fatigue and strain. Many students made reference to the time of day in their questionnaire. Because each group was so different we kept a log book to record the differences.

The time between the tests and now has been spent in marking the exercises and numbering each set. When marking the tests we have used templates to speed up the process, and as an aid to accuracy. This is to be followed by a visit to each of the lecturers with the results.

Conclusion

As a result of the May vacation tests, we found that many students felt the cloze procedure was not a particularly good measure for comparing the readability of course material, because there were too many other conditions to take into account, e.g. time of day (strain on students); the type of course (e.g. a Law paper may have more jargon than a French Civilisation paper); length of study guide (e.g. you could get a more even selection out of a larger study guide than you could from a smaller one).

Many negative comments turned up in the questionnaire as to the validity and point of the exercise. This made us feel that our introduction was still inadequate, but as students tended to raise points that we had covered vocally as well as in the written explanation this resistance appeared to be something we could do little about. Very few students were prepared to comment adversely on the communicative aspect of study guides. They tended to make safe comments of a general nature, e.g. the print size, clarity of print, layout of study guide. Many were extremely suspicious about divulging their names, even having been assured that Extramural Studies was a separate department and that the information was confidential. Although there were a few students who were very interested in knowing more about the project, for example teachers who had taken similar tests with their own students, the bulk of students completed the exercise and questionnaire as a matter of course.

Looking back on our experience, there were many surprises. Some lecturers who were initially very suspicious were finally 'converted'. Students were very doubtful about giving their name in the questionnaire and this had to be more fully explained. We learned as we went along and there were slight changes we had to make in terms of how the research could be carried out. Initially we had planned to sample most courses. We realised our limitations very early on however and despite these feel we have managed to sample a sizeable cross-section of papers that will give some worthwhile results.

Ways Of Varying The Blanks When Using The Cloze Procedure

by Graham Wagner

Although there are different ways of selecting or randomising words for deletion when using the cloze procedure this paper is only concerned with studies that have used a mechanical 'n'th word deletion pattern. This is so because most researchers have employed this method and if I widen the scope of this paper too much I could become 'bogged down' in diversionary debates over issues like type of words that should be deleted, whether a seventh word deletion pattern should be used in preference to a five word one, the inappropriateness of the five word deletion pattern for small children versus the balance between test stability and economy deriving from using the five word deletion pattern, and so on. Personally I think these are important matters which will all be sorted out in due course, but not here. What I want to draw attention to are some quite obvious facts about the standard cloze blank and then move on to discuss how some researchers are varying the use of the blank within the traditional mechanical 'n'th word deletion system.

The standard blank was first referred to by Wilson Taylor (1953) in his pioneering work on the cloze. He said that in his research he reproduced "each mutilated passage with a blank of some standard length (so the length would not influence the guessing) in place of every missing word". Later, in one of his papers Bormuth (1968) reported that "Deleted words were replaced with underlined blanks 15 elite typewriter spaces in length". (Note that care should be taken if Bormuth's directions are changed into linear measurements for a 15 elite typewriter space is 3 cm in length, however a change of type size would then mean a corresponding change in blank length - e.g. 3.6 cm for pica type).

Standardised Size

To simplify matters most researchers have now standardised on a 15 letter space blank. This procedure automatically matches the length of the blank to the size of type being used and simplifies directions to typists.

Nevertheless, standardisation on a 15 letter space blank is not completely universal. Boyce (1974) for one states that the blanks can be 10 or 15 typewriter spaces in length. However, it makes good sense to adhere to the 15 letter space blank because most words in the English language are about 12 characters (or less) in length, and if the testee is to have adequate space to replace deleted words then 10 typewriter spaces is not enough room. Cramping the performance of the responders will interfere with their performance as well as make the researcher's task of marking more difficult.

So far I have drawn attention to cloze passages that have been reproduced in typewritten format. Anderson (1971) has suggested another presentation format. His research shows, that blanks of the same length as the deleted word are an effective alternative. To prepare cloze passages he glued paper over the words in the originals that were to be deleted then photocopied the passages. He argued that this method means that the size of print, length of deleted words, illustrations and page layout could be important as contextual clues involved in the exercise. After all, he said, what we are trying to find out is whether the testee can comprehend the material as it is.

Boyce (1974) used a variation of Anderson's photostat format, mainly it appears, because of the cost involved in typing 112 different cloze exercises. A real difficulty with Anderson's format is that the small type print and the size of some people's writing means that testees are often required to write their responses in numbered spaces in the margins or on separate answer sheets. This seems to me to largely negate Anderson's argument for the use of his format.

A recent attempt to give subjects at least a clue as to the length of the deleted word to see what effect this has upon their scores can be seen in the work of Rush and Klare (1978). Although in the past it had been claimed that standard size blanks should be used because blanks of the same size as the deleted words provided undesirable clues (Klare, Sinaiko and Stolurow, 1972) the work of Anderson (referred to above) and Spooncer (1974) demonstrated that varying the size of the deleted word did not have a significant effect on cloze scores.

However as Rush and Klare found when the standard size blank was replaced by a dashed proportional line (with one dash for each letter of the deleted word) cloze scores were significantly higher. In another report (Entin and Klare, 1978) this result was confirmed with the surprising news that in both the last two studies the mean percentage correct for the dash line cloze was roughly 1.5 times that of the solid line (standard blank) cloze. The significance of this is that a researcher who wanted to depart from the standard format for some reason or other can now do so with the confidence that their results can be translated into a form that will be interpretable in terms of Bormuth's criteria.

Increased Perseverance

I recently employed the dash line blank in a readability study at Upper Hutt College. My reason for using it was based upon the need to give some support to a small group of slow learners in a mixed-ability fifth-form economics class without losing anything in interpreting the results. I found the dash line format certainly helped the slow learners replace prepositions and articles without much trouble. This achievement appeared to give them the confidence to persevere through the testing session with a sense of purpose.

There was no evidence of frustration or confusion present in this group as there was in another group I tested where the standard blank had been used. Of course there were age differences to consider in this type of comparison, but it does suggest that the dashed line blank be further investigated for the reasons Rush and Klare put forward. Namely that higher scores would help overcome the unnecessary frustration that subjects feel when doing a standard blank cloze. (Refer to Bormuth, 1969)

If anyone is intending to use the dash line format, allow half as much time again for the cloze administration. I noticed that the students in the Upper Hutt study required more time to complete a 100 item cloze test than I expected. They appeared to spend more time trying to fill in a blank, even to the extent of trying out different words.

In summary, the cloze blank issue has recently been reopened with the introduction of the dash line blank. Much of the reported research employing the cloze procedure has used typewritten versions of the actual passages selected for testing with deleted words replaced by a standard 15 typewriter space continuous line blank. It does not appear that the length of the blank is a significant factor although we have some evidence now to suggest that if a dash line blank is used, the total percentage scores will be roughly one and a half times higher than if a standard blank had been used.

An interesting thing to note about the robustness of the cloze as a measure of reading comprehension is that whatever you do to the blank left by the deleted word, the results appear to be able to be interpreted in a meaningful way. This suggests to me that the cloze blanks are not different in form from the answer space provided in any short answer test given by a teacher or examiner. The important issue in testing is always the quality (i.e. validity) of the question. In the use of the cloze the questions are the contextual clues from the remaining words between each blank. Rather than become too concerned with the cloze blank issue it would be more profitable for researchers to turn their attention back to issues such as the frequency of deletions, the use of original versions versus typewritten versions, constructed responses versus selective responses (either from a scrambled list of deleted words or from specially prepared multiple-choice responses alongside each blank) and other contextual issues.

Not Isolated

There are two points that Taylor mentioned in his 1953 article that we as researchers should not lose sight of. The first is that we should see the cloze blanks as a contextually interrelated series and not treat the blanks as isolated from each other. His second point is that the cloze procedure has "a mechanical simplicity that works". Researchers should be aware that varying the cloze blanks may interfere with the purpose served by the blanks and upset the simplicity and validity of the procedure.

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Creating A Context For Understanding And Interpreting Cloze Results

by Marianne Tremaine

In any research one question leads to another - and one answer leads to more questions. The purpose in beginning the extramural Readability Project at Massey University was to find out how readable study guides were by using cloze tests. However, it was clear from the beginning that the results of cloze tests would give us bald numbers which could answer only some of our questions. More information was needed to put these bald numbers in some kind of context, to give them meaning and make them comprehensible in a useful way.

To illustrate this point Table 1 shows the results gained from the Business Studies papers tested at May vacation courses in 1980, and gives some idea of the need for additional information to provide a framework for understanding the results.

TABLE 1

CLOZE RESULTS FOR BUSINESS STUDIES PAPERS TESTED IN MAY

	Indep. Level	Instr. Level	Frust. Level	Number of Students Tested	Total Enrolled in Paper	Students Tested as % of Total Enrolment
BS 1/1	30	22	4	56	207	27%
BS 2/2	9	2	0	11	48	23%
BS 3/3	0	12	5	17	19	89%
BS 4/2	16	13	3	32	43	74%
BS 5/2	3	11	2	16	25	64%
BS 6/2	6	1	1	8	11	73
Totals	64	61	15	140	353	
%	46%	43.5%	10.5%			

In the table, the papers are identified only as BS 1/1, 2/2, 3/3, 4/2, 5/2 and 6/2. The second figure identifies the level of the paper as 100 level (/1), 200 level (/2) or 300 level (/3). The next three columns give the number of students able to read independently, those who need further instruction and those who find the attempt to get meaning from their reading material an exercise in frustration.

No Magic

This classification of cloze scores into independent, instructional and frustration levels is something which tends to raise questions in the minds of the researcher and the lecturer involved. There is nothing 'magic' about these labels which are given to cloze score reading levels. They are just descriptive points on a scale like freezing point and boiling point on the temperature scale. Freezing point and boiling point provide known markers against which to compare other temperature measurements.

Another example is the way that parents need to know what is typical or normal before they can say that their child has grown very quickly or learned to read very early. So too anyone looking at cloze test results needs to use the criterion levels of independence, instruction and frustration to evaluate the results in terms of what researchers have found to be (Bormuth 1968, 1971) the levels of readability which an average of class scores represents.

However, to add a further dimension to those criterion levels of student understanding of their reading material, it seemed well worth increasing the length of testing sessions by administering a fifth passage to all students. In each paper four passages were selected from the reading material for that particular course, but the same fifth passage (a piece taken from the university calendar) was administered to every student. This common passage was able to be used as a point of comparison for cloze results from tests of course reading material. The readability of different sections of a course or of different papers could be compared using the common passage.

If students in a particular course seemed to gain low scores on their course material but a high score for the university act passage it would be reasonable to assume that the course material was very difficult, rather than assuming that the students had a poor level of reading comprehension.

The passage chosen from the university act was a difficult one which measured 22 as a reading grade level on the Flesch formula. The Flesch formula was used with all the passages because, if it showed a high correlation with cloze scores, it could be used in the future without the need to test students. Most passages were at the 12 or 14 reading grade level. The University Act passage is reproduced below. The words in italics were left blank in testing sessions.

UNIVERSITY ACT

Where any person has obtained in any University or other place of learning any degree or other academic qualification, or part thereof, substantially corresponding or equivalent, in the opinion of the Professorial Board, to any degree or other academic *qualification*, or part thereof, which the Council *is* empowered to confer or award, the *Council* may, if it thinks fit, admit *that* person ad eundem statum in the *university* without further examination and cancel any *such* admission at any time. A person *admitted* to the status of the holder *of* a degree or other academic qualification *of* the University shall not be deemed *to* be the holder of the degree *or* other academic qualification, nor shall he *be* entitled to be enrolled as a *graduate* of the University, but he shall *be* entitled to proceed to any degree *or* other academic qualification, to which the *degree* or other academic qualification, to the *status* of the holder of which he *has* been admitted, is a pre-requisite, upon *the* same terms and conditions as those *upon* which a holder of the degree or other academic qualification is entitled so to proceed.

Having the results of the university act passage made it possible to compare results from different papers, and also gave a useful point of comparison in considering the results of individual students.

For example, to look at the results of the whole class in BS 1/1 shows that in most cases students have gained higher scores for Passages A and B than Passages C and D and the University Act score is often in the mid-range between B and C. Each score represents the

TABLE 2

CLOZE TEST RESULTS FOR COURSE BS 1/1

Passage A	Passage B	Passage C	Passage D	A+B+C+D as a %	University Act	University Act %
17	16	10	9	52	13	52
11	14	9	12	46	11	44
21	20	12	6	59	13	52
19	18	10	13	60	12	48
11	16	10	4	41	3	12
18	18	7	1	44	0	0
11	19	6	1	37	8	32
19	22	13	8	62	15	60
14	10	11	8	43	9	36
13	11	11	7	42	6	24
19	17	12	6	54	10	40
21	20	9	9	58	12	48
17	15	9	7	48	8	32
12	16	7	3	38	8	32
11	8	4	5	28	9	36
17	20	13	10	60	14	56
16	17	8	6	47	12	48
17	18	12	10	57	13	52
17	22	13	16	68	15	60
13	10	7	5	35	4	16
15	20	14	10	59	14	56
14	19	10	10	53	14	56
15	17	8	6	46	8	32
19	19	6	1	45	2	8
15	17	11	10	53	13	52
20	16	10	7	53	10	40
14	20	7	11	52	12	48
15	12	6	4	37	9	36
16	19	16	17	68	13	52
16	20	6	9	51	11	44
14	20	9	7	50	13	52
12	9	10	3	34	9	36
12	17	5	5	39	11	44
10	14	4	3	31	3	12
13	14	7	2	36	2	8
15	21	11	1	48	11	44
22	17	15	9	62	9	36
17	20	13	18	68	14	56
16	19	11	17	63	16	64
11	16	11	13	51	13	52
7	11	3	4	25	6	24
21	18	11	7	47	14	56
20	21	10	8	58	11	44
15	18	13	8	54	9	36
18	19	12	12	61	14	56
16	19	10	16	61	13	52
19	17	10	9	55	13	52
14	17	8	4	43	6	24
16	19	15	6	56	2	8
13	18	7	9	47	12	48
19	18	13	9	59	12	48
16	17	3	Not done	36	8	32
11	10	5	3	29	5	20
18	17	13	17	65	15	60
17	19	14	7	57	14	56
17	11	6	6	40	11	44
Ave. 15.57	16.8	9.57	7.75		10.13	

Total Number of Students - 56

Course Material Passage Reading Levels

(50% and above) Independent Level - 30 (53.6%)
(35% - 49%) Instructional Level - 22 (39%)
(Below 35%) Frustration Level - 4 (7%)

Mean - 49.5
Standard Deviation - 11

University Act Reading Levels

(50% and above) Independent Level - 20 (35.7%)
(35% - 49%) Instructional Level - 21 (37.5%)
(Below 35%) Frustration Level - 15 (26.8%)

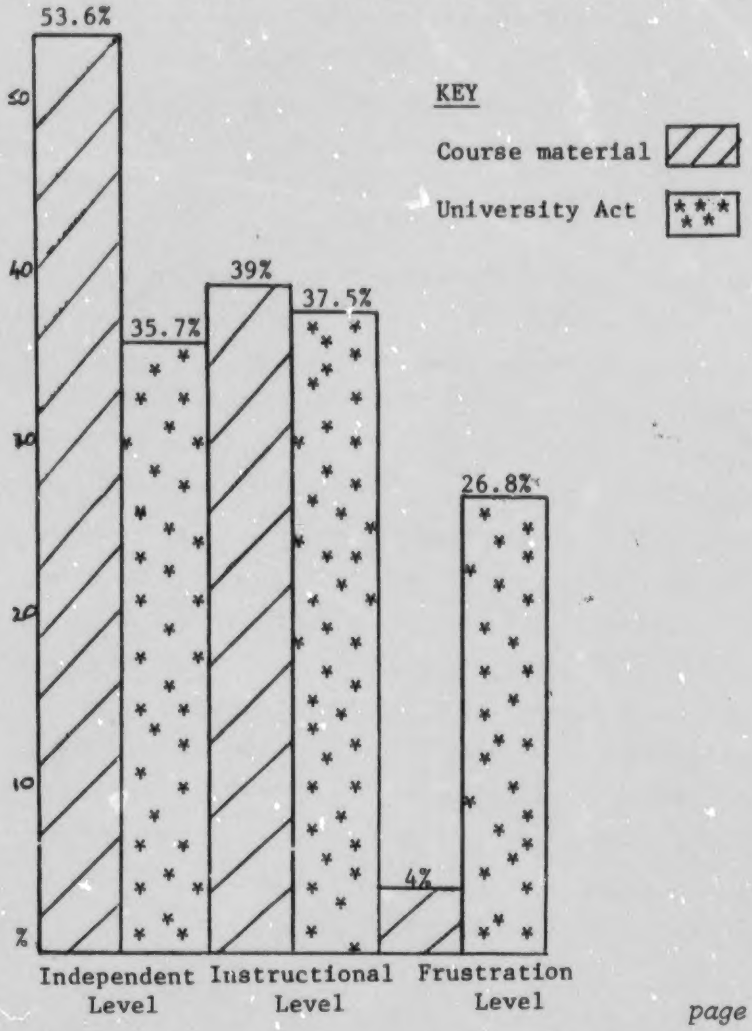
number of correctly completed blanks out of 25. The means of the passages for the whole group are given at the bottom of the columns of individual results - Passage A - 15.57, B - 16.8, C - 9.57, and D - 7.75 with the University Act - 10.13. Comparing the means from the five passages shows once again the usefulness of the university act passage as an indicator of the relative level of difficulty. The university act passage was always administered as the fifth passage, so that if students were suffering from test fatigue at the end of the session it would affect the results for the university act test rather than the extracts from course reading material.

Looking at the results of all five passages shows that the lecturer in charge of BS 1/1 could improve the readability of the course material by giving more attention to the parts of the course which include Passages C and D. However, as the summary of reading levels shows more than half of the students tested, 53.6% (30) are reading at the independent level, 39% (22) at the instructional level and only 7% (4) at the frustration level.

When the university act scores are converted into

FIGURE 1

Comparison of Results in Percentages of Students From Paper BS 1/1 Reading at Independent, Instructional and Frustration Levels for their Course Material and for the University Act Passage



percentages only 35.7% (20) are at the independent level, 37.5% (21) are at the instructional level and 26.8% (15) are at frustration level so taking the scores of the passages from the course as a whole the course material is much more readable than the university act even though this is not so for passages C and D taken by themselves. This comparison is shown in Figure 1.

Although it is interesting to know that if the lecturer concerned wished to make his course even more readable he should give attention to the parts of the course which passages C and D are taken from, the question of what he should do still remains. More information is needed on the type of problem students are having and how they see their reading material. In the Readability Project we administered a brief questionnaire which is shown in the appendix at the end of this paper. The questionnaire focussed on students' opinions of concrete things on the page like print size and layout as well as judgements of reading quality, quantity and questions on differences in their academic backgrounds. Students' opinions on whether the passages were representative of their reading material as far as the level of difficulty was concerned seemed particularly important as we were taking four brief passages of approximately 200 words as representative of all ~~the reading~~ in the course.

At this stage the data from the questionnaire is still being processed but even a brief glance at the general comments given by students tested in BS 1/1 gives some practical suggestions on possible improvements. The comments are listed below:

- Not enough information or study assistance.
- Difficulty in determining what is required by assignment questions. Photocopied materials difficult to read.
- Postings contain no inventories or explanations.
- Typing errors cause confusion.
- More direction as to what is important.
- Difficulty with jargon, a list to check of materials would be helpful as wonder if I've missed anything.
- Terms difficult to begin with (no previous background.
- Would like access to how one presents assignments and essays.
- Material has no instructions.
- Difficulty reading small print.
- Sequence of material not clearly explained, chronological reading process would be helpful.

- Copies poorly photocopied, boring presentation.
- Lack of or surplus punctuation.
- More direct reference to textbooks.
- Use of unexplained words.

Obviously more direction about what to read, how to read, what to look for, a glossary of terms and a checklist of contents would have helped these students. But further information from the questionnaire will refine the knowledge gained about the needs of students from these general comments.

These then, the questionnaire and the university act passage were the two main tools used in the Massey Readability Project to put the cloze results in a context which would help staff to understand them, interpret them and decide how to react to them. Like many other techniques, the cloze procedure is often blamed for not giving all the information which a researcher may want. But supplementing the procedure with other information-gathering devices can give a broader view of the reading material in a course.

The overall results of tests showed that a majority of extramural students are receiving material which they cannot read independently, but information from the university act test results and the questionnaire will be used to decide where and how improvements can be made in each paper.

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READABILITY QUESTIONNAIRE

For office use only

1 ☐
2 ☐

TITLE OF THIS PAPER: ______________________________

NUMBER OF THIS PAPER: ______________________________

1. In general, how have you found the interest level of the reading material in this paper?
   - Very interesting 3 ☐ 1
   - Interesting ☐ 2
   - Dull ☐ 3
   - Very dull ☐ 4
2. Did you think the quantity of reading material you received in any of your postings was ...
   - Insufficient yes 4 ☐ 1
   - no ☐ 2
   - Overwhelming yes 5 ☐ 1
   - no ☐ 2
3. How would you rate these factors as far as reading material in this paper is concerned?
   - a) Size of print
     - good 6 ☐ 1
     - bad ☐ 2
     - variable ☐ 3
   - b) Clarity of copy
     - good 7 ☐ 1
     - bad ☐ 2
     - variable ☐ 3
   - c) Layout e. g. headings, spacing
     - good 8 ☐ 1
     - bad ☐ 2
     - variable ☐ 3
   - d) Use of unexplained terms
     - seldom 9 ☐ 1
     - often ☐ 2
     - sometimes ☐ 3

Any other comments? ______________________________
____
____

10 ☐☐

4. In this paper is there anything at all which creates difficulty for you in reading your course material?
   - yes 12 ☐ 1
   - no ☐ 2

Please give details ______________________________
____

13 ☐☐

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5. How do you think the passages used in this experiment relate to the rest of the reading material in the course?
   - similar 15 ☐ 1
   - easier ☐ 2
   - harder ☐ 3

PERSONAL INFORMATION:

In order to make comparisons with other extramural students and for questionnaire follow-up, we need some personal details about you.

1. Your name ______________________________
2. Your address ______________________________
   ____

16 ☐☐
18 ☐☐

3. Your age in years as at 1st January 1980 __________ 20 ☐☐
4. Did you gain admission to university by means of
   - University Entrance 22 ☐ 1
   - Provisional Admission ☐ 2
   - Other ☐ 3
6. Could you please list all the paper(s) you are taking this year ______________________________
   ____
   ____
   and put the number of paper(s) in the box. 23 ☐
7. How many years before 1980 have you been a university student? 24 ☐☐
8. How many years before 1980 have you been an extramural student? 26 ☐☐
9. Is your 1980 enrolment, the first time you have enrolled in this particular paper?
   - yes 28 ☐ 1
   - no ☐ 2
10. Have you taken part in this readability experiment for any other paper?
    - yes 29 ☐ 1
    - no ☐ 2
11. Finally, do you have any other comments about course reading material, the questionnaire or the readability project in general? ______________________________
    ____
    ____
    ____
    ____

30 ☐☐

Thank you for your help

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Using The Results From Cloze Testing To Improve Technical Correspondence Institute Assignments

by Nola Holmes

Nola Holmes has a Master's Degree in Education and a Trained Teacher's Certificate. She was a primary school teacher for 12 years before taking up her present position at the Technical Correspondence Institute. In the Staff Training Section, she is involved in helping to train new tutors, and to conduct writing courses. She has carried out research into the readability of TCI assignments (study material).

In 1979, Graham Wagner from the New Zealand Council for Educational Research and I collaborated in a research programme. We tested 325 Technical Correspondence Institute students with some selected assignment extracts from their courses to see if the majority of these students found their assignments readable. We used the cloze procedure with a seventh word deletion pattern. The results proved that the extracts tested were too difficult for the majority of students to read and understand.

Basis for Discussion

As a basis for discussing the research results with the staff whose students were tested, I wrote a report in March of this year. The Deputy Principal and I had group discussions with the staff about the results. They agreed that follow-up sessions would show tutors how the research material could be used to help them to improve the readability of Technical Correspondence Institute assignments.

Subsequently, individual tutors and some small groups requested follow-up sessions in which the tutors discussed the assignments tested, the students' tests, and the data we used for collating the results. The tutors agreed that the cloze procedure reveals many of the difficulties that students have with their assignments and that it is a useful tool to help them write more clearly and at an appropriate level for correspondence students.

Revising Assignments

As a result of these sessions, some tutors asked me to apply the cloze procedure to assignments which they had written two years ago and now wish to rewrite so they can use the results to make their writing more readable for the majority of the students taking a particular course.

The following steps show the testing procedure used for one assignment:

1. The tutor chose an assignment that he thought was too difficult for most of his students. He indicated the five extracts to be tested.
2. I prepared cloze procedure tests on these extracts for 80 second year students attending block courses during May, June, July and August at the Taranaki Polytechnic and the Palmerston North Technical Institute. To date, I have tested one of these block courses.
3. The results shown in Table 1 on page 70 were analysed and discussed with the tutor.

Each column shows the individual scores out of 20 for each extract and the total percentage scores for the five extracts.

Cloze scores under 35% show a *frustrational level*. The test suggested that seven students found the extracts beyond them.

Cloze scores from 35% to 50% show an *instructional level*. The test suggested that ten students could read and understand the extracts, provided the tutor explained more fully the parts that individuals found difficult.

Cloze scores over 50% show an *independent level*. Two students found the extracts readable without any help. Table 1 also shows the students' comparative scores for each extract.

The average scores are used to rate the extracts in order of difficulty, going from the most readable which was Extract C, followed by Extracts A,

TABLE 1

Number of students tested: 19

Number of extracts sampled: 5 (A, B, C, D, E) from a Stage 2 Horticulture Assignment

Maximum score for each extract: 20

Extracts	*1	*2	*3	4	5	6	7	8	9	10	*11	*12	13	*14	15	16	17	18	19	Av.Scores	Scores range from
A	4	5	4	6	13	11	9	7	8	10	6	5	9	6	7	7	10	7	8	7.47	4-13
B	3	9	3	9	9	12	9	8	7	9	5	4	7	9	9	8	7	7	5	7.32	3-12
C	10	14	8	11	13	15	12	13	15	14	8	7	13	13	13	10	16	12	13	12.11	7-16
D	6	5	6	8	6	8	6	3	6	5	4	2	5	5	8	6	9	7	4	5.74	2-9
E	0	0	6	8	9	8	9	5	12	10	7	2	9	0	13	2	13	10	10	7.00	0-13
Total %	23	33	27	42	50	54	45	36	48	48	30	20	43	33	50	33	55	43	40	Ave. % Score = 39.63	
S.C. Subjects	2	5	2	5	3	5	5	5	3	4	2		5		5	5	4	2	3		
U.E. Subjects				5		3	4		2				5		2		3				

* Recommended help from Adult Literacy tutors

B, E, to the least readable Extract D. We compared Extract C with Extract D. Extract C was more readable because there were fewer polysyllabic words and explanations using some short sentences were more simple. Extract D had more technical terms, some confused sentences, some unnecessary words and some words unfamiliar to the students.

4. The asterisks on Table 1 indicate the students with scores under 34% who need outside help which I can arrange with Adult Literacy tutors.
5. I prepared a language analysis assessment for each extract as follows:

LANGUAGE ANALYSIS FOR EXTRACT D

DAMPING-OFF DISEASES

The diseases may be caused by several fungi, but the most important and common are the water *moulds* (Pythium and Phytophthora) and Rhizoctonia. Infection *may* cause death of germinating seeds before *seedlings* emerge above ground level (pre-emergence damping-off) *or* death of seedlings after emergence (post-emergence *damping-off*).

The water mould and Rhizoctonia fungi, *which* can exist in the soil as saprophytes on dead organic matter, are not *restricted* ~~to living~~ solely on living plants. *Thus*, mycelium of these fungi can continue *to* grow in the soil on crop *debris*, weeds, and other organic matter.

Water *mould* fungi are very active in wet *soils*, whereas Rhizoctonia species are troublesome when *soils* are drier. Damping-off problems from either *of* these fungi are therefore likely to *beset* the horticulturist at any time.

TYPICAL LIFE CYCLE OF A WATER MOULD FUNGUS

The *full* cycle is summarised in Fig. 4. *Water* mould fungi produce zoospores in sporangia *during* favourable periods. The zoospores are released *into* the soil and swim in water *films* around roots and soil particles.

Results

Key: * - the number of exact replacements
x - the number of incorrect responses
o - no responses
r - replacement words that show students probably understood what they read.

1.	moulds	* = 1; x = 11; o = 1; r = 6
2.	may	* = 1; x = 6; r = 12
3.	seedlings	r = 19
4.	or	* = 4; x = 3; o = 1; r = 11
5.	damping-off	* = 16; o = 2; r = 1
6.	which	* = 5; x = 5; o = 6; r = 3
7.	restricted	* = 3; x = 11; o = 1; r = 4
8.	thus	x = 16; o = 3
9.	to	* = 19
10.	debris	x = 10; o = 1; r = 8
11.	mould	* = 14; x = 4; o = 1
12.	soils	x = 10; r = 9
13.	soils	x = 6; r = 13
14.	of	* = 17; o = 2
15.	beset	x = 7; r = 12
16.	full	x = 4; r = 15
17.	water	* = 11; x = 8
18.	during	* = 7; x = 5; r = 7
19.	into	* = 13; x = 4; r = 2
20.	films	* = 1; x = 12; o = 5; r = 1

Replacement Words

moulds - mould (6)

may - can (12)

seedlings - they (19)

or - and (11)

damping-off - damping (1)

which - that (3)

restricted - confined (2), limited (1), orientated (1).

debris - waste (3), wastes (1), residues (2), residue (1), remains (1).

soils - conditions (7), environments (1), condition (1).

soils - conditions (13)

beset - trouble (6), bug (1), strike (2), bother (2), concern (1).

full - life (15)

during - in (7)

into - in (2)

films - deposits (1)

In the first line of Extract D one student gave moulds (an exact replacement) one student gave no response, eleven students gave incorrect responses, and six students gave mould (singular, instead of the plural).

Using Results

Such a record enables the tutor:

(a) To use words more familiar to these students, who can then read and understand future assignments more readily,

(b) To avoid unnecessary subordinate clauses starting with that or which,

(c) To shorten overlong sentences if the meaning is confused or if there are too many complex ideas,

(d) To avoid passive tenses when possible, and,

(e) To avoid too many prepositions and adverbs,

(f) To eliminate unnecessary words and jargon, and,

(g) To check that words of three or more syllables (apart from technical terms) are necessary.

If such points are used as warning signals, writers can in future try to write clearer study assignments which will be geared to the reading capabilities of the majority of students.

6. The tutor has agreed to rewrite Extracts A, B, C, D, and E. He will use the language analyses to help eliminate as many difficulties as possible. The new material will be tested at later block courses.
7. When the testing of 80 students is completed, the tutor will have worthwhile data for use in future writing.

Other research has included:

1. Cloze testing of another tutor's assignment which resulted in a third of his block course students accepting help from Adult Literacy tutors. This tutor realised that he must simplify future writing for this group.
2. A tutor's request for a language analysis of his assignment that was tested in the original research programme. He intends to use the analysis as a guideline for rewriting.

3. A tutor's request to test a draft assignment at a block course so he can match his final writing more effectively to his readers.

Experts claim that the cloze procedure is the best of the readability tests to apply to technical writing. Despite some disadvantages, its recent application to Technical Correspondence Institute assignments has provided vital facts for us to use in producing better teaching and study material for future technical correspondence education.

PART THREE

Preparing Readable Materials

The way that each distance learning institution prepares study materials is different. Differences depend to some extent on a mixture of history, expediency, practicality and informed judgement as well as the gradual changes which take place in the expansion of the institution, the type of clientele it serves and the range of courses it offers.

Those of us who work within a particular institution become used to its ways and methods of preparing materials seem so well known and understood that they are barely worthy of comment. However, to the uninitiated, methods used by different institutions need to be explained and comparing the way each has tackled the need to make study materials readable gives valuable information on the needs of distance learners.

In this section Gilbert Hadfield in a personal view describes the way study guides are prepared at the Correspondence School, Dorothy McGray and Heather Mulholland explain the method developed by the WEA Trade Union Postal Education Service, Terry Povey outlines the system used by the Centre for Extramural Studies at Massey University and Peter Wilkinson gives an account of course development practices at the Technical Correspondence Institute.

In the second part of this section Terry Povey gives advice on using graphic design and layout to enhance and improve the readability of printed material.

Correspondence School Courses: A Personal View

by Gilbert Hadfield

Gilbert Hadfield gained a BA at Canterbury University and worked as a professional photographer and freelance journalist before deciding to become a teacher. He trained as a teacher of secondary school English, Music and Social Studies and joined the Correspondence School in 1972. As well as teaching some third form students, he also edits a magazine for correspondence parents, advises on copyright and assists some of the school's course writers.

As a newcomer to the Department of Education's Correspondence School, my first task was to find out how its courses were supposed to be written if one followed the correct procedures. Then it began to dawn on me how they were actually being written. Now after eight years at the school I am part of a team trying to get agreement on how our courses should be devised.

Current practice varies from a lively team approach using multi-media, to traces of the old at its worst, i.e. one teacher + one room + one year = one course! With a staff of about 400 and a roll of around 20,600 students from pre-school to Form Seven and teacher training, such variety is only to be expected. In addition there has been no central point with editorial or other functions through which new courses had to pass. Hopefully the school can begin the eighties by developing a better system for writing and revising courses. Only then will individual aspects such as readability gain the attention they deserve.

Systems Approach

The concept of a team responsible for each new course is central to the proposed system. Now in its third draft and near acceptance, a paper on courses firstly identifies each separate step in the process, and secondly allows for participation by more people. It is a systems approach with an emphasis on the people involved. The school's courses are to be reviewed annually to assess priorities for revision and replacement. Likewise time, money, expertise, production and other constraints will be taken into account in assessing the school's capacity for changing courses.

Team Responsibility

One of the biggest barriers to course development is the feeling that what a person writes belongs to him or her so that any suggestion of change wounds the author's ego. If a course is devised by a team of two or three people jointly from the planning stage onwards, this will be overcome. Feedback from a wider pool of people will stimulate the team itself. In this way balance, support and responsibility is shared, even though one person may be the writer.

Defining Purpose

The team's first task is to define the types of students and the content, purpose and methods by which the course will operate effectively as an aid to student learning. To do this the team thinks through the steps in the "Checklist for Courses" shown in the Appendix. They come up with a course plan or proposal. This is discussed within and outside the school and modified until it is acceptable.

The team goes through the same process in microcosm to reach a plan or proposal for each section of the course. This outlines the materials needed to assist learning from one to six weeks of the student's course time. One or more from the team draft assignments or units along the lines set out in the section plan. Drafts are discussed first by the course team, later more widely until accepted and approved for production.

Using Feedback

Specifications are discussed with media specialists, typist, illustrator, audio and so on. When the masters have been finalised, enough copies are printed or duplicated to last just one year, unless the materials have already been trialled. The intention is that feedback from the first year's students will be used to modify the materials to be used by future students. The people responsible for each course must receive feedback. The quality and costs of making multiple copies will be monitored. Tutors should be introduced to new course materials. They should also have natural channels for suggesting changes, basing these on their assessment of student learning in terms of the objectives intended. Feedback must also reach the management of the school to provide a basis for deciding fresh priorities when courses are reviewed each year.

Old habits die hard. But I hope that real change is possible. We need a better system of devising courses that enables staff to inject new life into course materials as tools for student learning. In this way we would improve "learnability", to coin a word, of which "readability" is only one component. ◆

Appendix

CHECKLIST FOR COURSES

Students

1. Types of students expected to take the course.
2. Their needs and interests.
3. (a) How they learn naturally.
   (b) How they can be motivated to learn through the course.
4. Knowledge attitudes and skills -
   (a) assumed prior to the course,
   (b) to be learnt during the course.

Sources of Content

5. Syllabus and current curriculum developments within the Department of Education.
6. Research findings on content and/or on the types of students for this course.

Intentions

7. Purpose and aims.

8. Objectives and outcomes: what students should be able to do as a result of the course.

Teaching and Learning Expected

9. (a) Broad types of student learning activities: Suitability, relevance, motivation, learning processes, reinforcement.
   (b) Student time, conditions and equipment considered essential and desirable.

10. Broad structure and sequence of the course, e.g. core remedial extension and individualised components.

11. Types of media and materials expected to be used (including textbooks and kits). Choice of media and their integration. Effective use of printed and visual communication, of audio kit and environmental components. Broad specifications for formats, workbooks, visuals, audio. Systems for identifying components.

12. Money, time, space and staff required for course materials, their creation or purchase, reproduction, storage, handling, distribution, return and recycling.

13. List of sets/modules/kits showing main purpose, study area and learning activities of each section of the course.

14. Broad specifications for the:
   (a) handling of ideas, their number, continuity links, desirable repetition and revision.
   (b) use of language for clear communication, reading/listening levels, number and complexity of words, sentences and paragraphs or segments of sound.

15. Checks for:
   (a) use of copyright works in print, visual and audio media.
   (b) controversial issues. These must be fully discussed with a Deputy Principal and/or with the Principal.

Student-Tutor Roles

16. Student responses expected and how these will be recorded and returned to tutors. Which will be self-marked immediately and which tutor-assessed?

17. Student support systems: Who will students contact and how if they run into trouble with the course?

18. Tutor roles, responses and feedback to students. Creation and use of tutor-sent materials. Tutor time, conditions and equipment considered essential and desirable.

19. Tutor support systems. Introducing the course to tutors. Assisting their professional development long term.

Assessment and Evaluation

20. Means of assessing student learning, immediate and cumulative, towards objectives.

21. Means of evaluating effectiveness of the course in enabling students to learn. System for modifying course materials for next edition.

Time and Feasibility

22. Checks for suitability of masters for reproduction.

23. Expected time required for preparing course plan and for devising each section of the course.

24. Expected time and costs in preparing and then reproducing masters.

25. Expected dates for distribution use and return from first students.

Preparing Courses For The WEA Trade Union Postal Education Service

by Dorothy McGray and Heather Mulholland

Dorothy McGray was educated at Durham University, England and moved with her family to New Zealand in 1969 and became active in the Playcentre movement. She was a Playcentre Supervisor for two and a half years before becoming Joint Secretary/ Organiser of the WEA Trade Union Postal Education Service in 1977.

Heather Mulholland was educated at Victoria University. She developed an interest in continuing education through involvement in the Playcentre movement and as a member of a steering committee which set up an alternative primary school. She became Joint Secretary/ Organiser of the WEA Trade Union Postal Education Service in 1977.

The WEA Trade Union Postal Education Service has been in operation since 1968 and was modelled on similar schemes in Britain and Australia. It is directed by a committee which contains equal representation from the Federation of Labour, the Workers Educational Association and the National Council of Adult Education.

Unions may affiliate to the scheme at a cost of $20.00 plus two and a half cents per financial member. Members of affiliated unions and their families are then eligible to participate in a wide variety of courses at a minimal cost of $1.00.

Experienced Tutors

Each course consists of two to twelve study books. They have been written by people who are knowledgeable and active in their various fields, and the team of tutors who correspond with students about their courses are also well experienced, especially in guiding the learning of people who may have been away from school or formal study for a long time.

The number of assignments undertaken by students exceeded 1,000 for the first time last year. More than six hundred people from the 40 affiliated unions enrolled in courses. An increase in these figures is expected this year.

The joint secretary/organisers share one full-time position operating the service on a day-to-day basis and the budget last year was in the vicinity of $15,000 which includes salaries.

These limited resources are the main reason for not, until now, concentrating on readability of course material and course presentation to the degree which would have been ideal. So, this description of methods of preparation and presentation, will have many shortcomings but this seminar may be the starting point of a study into better methods.

Objectives Discussed

As, unlike most other correspondence services, there is no pool of authors on the staff, experts in the particular field of interest are approached. It may take several months to find someone willing to devote spare time to this cause, for the Trade Union Postal Education Service cannot afford professional rates of payment. Once a suitable person is found, meetings are arranged to discuss the objectives of the course thoroughly and the range of students. An outline is agreed upon and the writer prepares the first drafts. On the whole students have not done much, if any, study since they were at school, and that was quite often a negative learning experience for many. Each student who completes one of the courses receives a certificate. Tutors assess and comment on assignments rather than mark them formally. Students are mainly motivated from interest in a particular topic and a desire for self-growth. The author understands that an academic and formalised manner of writing is not appropriate.

The Adult Study course which reintroduces students to study methods was checked at draft stage by a member of the organising committee who understands the nature of learning by correspondence and is skilled in this type of writing. Mostly, however, it is a matter of trial and error. The Sociology course which was introduced two years ago was written by an academic. Feedback from students showed that it was too dry and off-putting - so the first booklet was rewritten in a simpler, more fluid style to capture the reader's interest.

Stimulating Interest

The newest course on Local Government which is in draft form now, has been written by someone with a keen interest in the topic and checked by an expert for accuracy. This author is prepared to spend extra time discussing content and expression, rewriting drafts and planning an imaginative layout to make the course booklets as attractive and readable as he possibly can. This is rare, however, and we are becoming increasingly aware of the need to devote more time to preparing and presenting material in such a way that it is going to stimulate the reader's interest, motivation and desire for knowledge.

The Production Process For Study Guides At Massey University

by Terry Povey

Terry Povey spent twelve years as a primary school teacher prior to taking up his position at Massey University. His experience has included a period as an adviser on teaching methods and as a lecturer at Palmerston North Teachers College. He is currently Educational Resources Officer with the Centre for University Extramural Studies at Massey and is involved in providing advice and assistance in course design and presentation to staff teaching extramurally.

With extramural study material the process of production from the lecturer's pen to the printed word is flexible and variable according to the particular situation encountered with a particular course. If a course design calls for rapid and continuous student response to multi-choice questions then the study guide may be designed as a series of tests bound together as a pad. On other occasions there have been situtions when it has been necessary to print and issue materials within a matter of weeks. The flexibility of the system allows for this.

Individual Responsibility

Basically, the university operates on a policy which holds that, within specified limits, a course is the responsibility of the course controller. This means that while assistance and advice is available, the decisions on the content for a course, the type of assignments set and the evaluation procedures to be used are decided by each course controller. As a result, a course structure may change as often as its controller changes. Our production system is geared to cope with this although there has been a trend to greater stability in course controllers in some faculties in recent years.

In the Massey production system, then, the initial link in the chain is the course controller. He may gather round him, formally or informally, assistance in the form of teaching colleagues, the Educational Resources Officer, information culled from a variety of sources including previous students, and study guides from other courses. The course is then planned and written. The main means of communication remains the printed word although other forms are starting to appear.

The initial study guide usually includes information about posting dates, assignment schedules, vacation courses, examinations, assignment writing, assessment procedures and other housekeeping matters. Increasingly a photograph of the lecturer and brief biographical notes are included to help forge a link between tutor and student. Also included in the initial posting will be sufficient teaching materials to get the student at least halfway through the first term.

Once written the guides are typed on format sheets ready for printing on offset multilith. Two formats are used. The most common is the double quarto stitch and fold booklet with a 20 percent reduction imposed on the original to bring an A4 size down to double quarto. The other format is the standard A4. This is used for reproducing 'readings' and for a number of courses such as mathematics.

Layout Decided

It is at this typing stage that decisions are made about the layout of the page. Again a wide variability in practice occurs. Some lecturers prefer to leave the layout to the typist while others prefer to discuss possible layouts and some even specify line by line how the finished guide should look. The prepared format sheets are returned to the lecturer for correction. Once these corrections are finished the study guide is pasted up ready for printing and sent to the printery.

Occasionally, where it is necessary, photographs are included in the study guides. This causes further variations in the standard procedures and results in longer preparation time by extending the normal three week turnaround by up to six to eight weeks. ☙

Course Development At The Technical Correspondence Institute

by Peter Wilkinson

Peter Wilkinson was a primary school teacher for 11 years before becoming a Presentation Editor with the Technical Correspondence Institute. In 1980 he was a Teaching Fellow in the University Teaching and Research Centre at Victoria University of Wellington. He has a Bachelor of Education degree and at present is making progress towards a Diploma in Education. His special interest is in the development of correspondence teaching materials.

There are four stages to course preparation at the Technical Correspondence Institute:

1. Planning
2. Writing
3. Editing
4. Production

Planning for most new and revised courses takes place at two levels: the subject or course level and the assignment level. Because at least 95 percent of Technical Correspondence Institute courses are written to meet the requirements of examination prescriptions, planning at the course level generally consists of arranging prescribed topics into a teaching sequence and then dividing the arranged sequence into the number of units set at the time approval for the course was granted. Those involved with the planning at this level are the course supervisor in charge of the course and the tutors appointed to write and technically edit the units in the course. Aims and objectives, depth of treatment and teaching strategies may also be discussed at this level of planning. As a rule, course planning at the Technical Correspondence Institute is governed by the usual product, which is a set of standardised printed 'lessons' (called assignments) to be studied in the order provided. A course in a subject for one year usually comprises 10-12 assignments. An assignment is generally a complete learning resource for the student, containing information, practice exercises, summaries and test papers. A few courses only refer students to set texts.

Detailed Plan

Planning at the unit level is usually left to the appointed writers. Most course supervisors insist that writers submit a detailed writing plan for each assignment before permission to start writing is granted. Writing plans generally comprise a breakdown of the central topics of the assignment into headings and subheadings. When several writers are appointed to write assignments for a course, continuity and integration is obtained by informal get-togethers.

Writing at the Technical Correspondence Institute is generally an individual task. Writers are encouraged to seek the advice of colleagues within and outside their department and from experts in industry. Advice and help is also available on request from staff trainers on teaching strategies, presentation editors on copy layout and the use of language, and the illustrations adviser on suitable illustrations. A small team of illustrators and a photographer are also available on request to help writers prepare illustrations for their assignments. An important aid to the writer at both the planning and writing stage is the standard format prescribed for all courses at the Technical Correspondence Institute. Once drafts of assignments are completed, they are ready for editing.

The individual drafts of teaching assignments are edited first by an appointed technical editor and next by one of a team of presentation editors. The technical editor of an assignment is usually a colleague at the Technical Correspondence Institute who is also an expert in the subject of the assignment. This person reads through the draft to ensure that the text and illustrations are technically accurate and that the aim, scope and depth of treatment of the assignment is in accord with the writing plan. Points over which the technical editor is at variance with the writer are noted and later discussed with the writer. Technically edited drafts are then submitted to the illustrations adviser whose job it is to advise on aspects related to the reproduction of illustrations included within assignments.

The Production Co-ordinator is next in line to receive assignments. Given a date which an assignment is needed by the student, the Production Co-ordinator establishes its priority in relation to all other assignments passing through the production system. All assignment drafts are then passed on for editing by one of a team of presentation editors.

A presentation editor has language skills, and not being an expert in the subject is able to perceive assignments in much the same way as students may see them. He or she uses a pencil to mark up the draft for typing and to correct or simplify the textual material on the page. Where possible, each presentation editor will try to edit all the assignments in one course.

The edited version of a draft is then returned to the writer for checking. Once checked, the draft is handed to the course supervisor and the Head of Department to be approved for production. Two substages characterise the production stage of course development at the Technical Correspondence Institute:

1. Master copy preparation
2. Printing and storage

Preparing Master Copies

A team of typists using IBM golfball typewriters either prepare original master copies from handwritten assignment drafts or modify the master copies of revised assignments. Before the typist's work is proof-read, trained personnel mount any illustrations on to the master copies in the spaces left by the typist. The writer is then given the opportunity to check the typed product. Master copies of assignments are ready for printing after errors have been corrected.

The Technical Correspondence Institute is fortunate in having its own reprographic facility, comprising 15 Multilith off-set machines, a Heidelburg 2-colour offset press, and a full range of modern ancillary equipment. The reprographic unit is responsible for printing, collating, and stapling the completed assignments, which are then sent off to the assignment store to await distribution to students.

Layout And Legibility Of Printed Materials

by Terry Povey

Research on the layout and legibility of printed materials is well established. Current practices are a mixture of research, self evident fact, intuition and art. Articles such as "Fifty Guidelines for Improving Instructional Text" by James Hartley and Peter Burnhill (1977) bring together the results of much of the research that has been undertaken over the past twenty years. Such research includes investigations into print size, line length, graphs, pie charts and tables, as well as areas such as mathemagenics, arousal, and questioning techniques.

Many of these findings have been incorporated into the basic well-established codes of printing practice. In, for example, the justified vs unjustified right hand margins quandary, there is evidence to show that while justified texts do look better they are more costly and often slow up the reader as globally all the lines look alike with few reference points for keying in to each line. Until now this has not been an issue for the non-typeset work most of us are involved in, but with the increased use of word processors with proportional spacing and justification possibilities it is becoming a point on which everyone will have to make decisions.

Marshal McLuhan's famous phrase "The Medium is the Message" applies as much to printed materials as it does to other forms of communication. The format of a page along with its content, legibility, writing style and vocabulary, helps carry the message of the writer's intent. Every time we prepare an article or a study guide we are creating messages in several dimensions. A page of comics as a presentation tells us as much about the writer's view of us as does a page of dense turgid prose. A typeset page tells us about a formal relationship with the writer while a page of typescript suggests informality.

Maximising Learning

These dimensions present a variety of concerns for writers. There is the concern that the information, whether it be skill, concept, or fact-related is accurately described in print. There is the concern that sufficient cues are incorporated in the text to enable the learner to discover what is to be learned through maximising the conditions for learning. Such conditions include maximisation of arousal, focussing of attention, and the provision of feedback. Further dimensions include the concern for the affective effects of the message, and the pervasive dimension of graphic representation of the print on the page. I believe all these dimensions are present in every printed communication. Even when we choose to do nothing about the more subtle dimensions they are presenting their uncontrolled messages to the student or reader. I want now to examine these dimensions and see if they can be related to a scheme for preparing study materials.

Environmental Conditions

I have found that in order to account for all these dimensions one has to be able to divorce oneself from the role of the writer, or designer, or typist, or printer, and take on the point of view of the learners in order to appreciate the environmental conditions under which they work. Such environmental conditions include those which are physical, psychological, and sociological. For example many, if not most, of our students turn to their studies in the evenings. They have to turn a deaf ear to television, deny their family conversation, refuse to yield to the temptation of squash, the movies, or the theatre, and communicate with others some distance away in space and time through strange, sometimes illogical squiggles on bits of paper. Physically they are more often than not tired and exhausted after a wearing day. In terms of the three environmental domains they are at the lower end of the scale. What effect does line length, the size of print, double or single columns, charts, lists, the use of headlines, footnotes, review exercises, simple or complex sentences have on their learning? I believe these factors are more likely to play a greater part in the learning of these students than it does for those who learn under optimal environmental conditions. Our role as writers, researchers, designers, typists, and printers should be to eliminate or reduce as many of the distracting characteristics of our study materials as possible.

Communication Model

A useful way I have found to view printed materials is as a communication channel based on a classical communication model such as the one below.

```
SENDER ----→  COMMUNICATION CHANNEL  ----→  RECEIVER
         "                             "
         "                             "
         ←←---------DISTRACTORS--------→→
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While this is a somewhat mechanistic view of communication it does highlight many of the important areas and provide a systematic way of improving the readability of texts.

Clarity Important

Let us turn to some of these. Firstly the encoding of the message by the course writer. He should write simply and clearly. Sentences should be short, as they are easier to understand than long ones. Miller (1964) suggests that the more subordinate clauses one encounters in a sentence the more difficult it is for the message to be accurately conveyed to the reader. The writer should write positively. Experience has shown that students progress faster when they are told what to do rather than what not do do. Avoid instructions like "read the first one or two sections before answering the questions", or "this almost nearly always occurs."

Another writer-originating distractor is the overuse of the words - if, except, for, and unless. While these exceptions must be included in text if they are relevant to what is to be learnt, they are often there for added background information, and the student is only expected to know that there are exceptions. In such cases the details should be omitted or a reference provided for those students interested in following up the discussion with further reading. Often exceptions form a hidden curriculum and are tested in overt as well as covert ways. A common belief that appears to be held by students is that if it is in print then it is to be tested, and if it is to be tested then it is to be learnt. In this way the main thread of the discussion may become obscured as the students become involved in less important issues. Positive writing helps provide the reader with a sense of security and direction.

Distracting Role

One should also consider at this point the distracting role that the learning of technical terms and the growth of new vocabulary can play. This learning is an important part of any course of study and consideration should be given to assisting the learner by using the new language within its own context and including a glossary where necessary.

Further encoder-originated devices found in study materials are cueing devices such as: paragraphs, section headings, and questions. All these serve to cue the reader in several ways. If you half-shut your eyes and peer at a page of print though the eyelashes so that the print can no longer be deciphered, you see a graphical representation of groups of meanings.

These groups of symbols give us expectations about the message before we start decoding. The blocks of print created by sections and paragraphs are the basis of the visual presentation. To highlight this graphic organisation a line-spacing between paragraphs is preferable to indenting the first word.

This notion of viewing the page as a graphic can be extended further. If, for example, a paragraph of textual explanation is to be followed by a worked example then something should be done to graphically separate the two giving them each spatial identity. This can be done by keeping the parts physically separate on the page, or giving them a distinctive shape e.g. a square as against a rectangle, or changing the shape of the internal characters by changing print styles, or separating them from other parts of a page by a boundary such as white paper or a black line.

Arousing Devices

Questioning is another important area in course design which is reflected in the layout of material. I have commented earlier that a goal of all course writers should be to involve the student in the learning process - through a series of arousing and attending devices.

One of the most commonly used devices is that of questions. Ropkoff (1966) and Frase (1966) both researched the placing of questions at the beginning, during, and end of textual materials. They found question placement had different effects. Questions (and specific objectives often fill this role as well) at the beginning of the text or at the beginning of sections of text carry out two specific functions. Firstly they focus attention and bring about specific learning which is not retained over long periods, and secondly they have an arousal function.

Bull (1973) argued that the types of questions used at the start were important. Questions which were more general about the text to come were preferable to specific questions as they were more reinforcing for attentive responses, i.e. they made the reader attend to the material for longer in order to answer the broader questions. It was also found that the level of arousal enhanced performance over time, while low arousal gave better immediate performance. Factual 'fill in the blank' and 'multiple-choice' questions are examples of the specific nature of low arousal potential questions. These types of questions are better located in review areas. This does not mean that questions which provide for student-constructed answers should only be used to introduce textual material. Rather it suggests that a review area should contain both types.

The next step in the communication chain is the communication channel - the printed page. There are of course some very obvious distractors which affect readability. Pages which 'bleed through' from the next page - caused by too much ink, or too thin paper, broken or faint print - caused by poor plate-making, or poor original copy (most often the latter) are examples. Other distractors include lines inconsistently spaced without reason; print which is not level; print with letters which are swallowed up in black ink; again poor plates or poor original copy; and print which is so tiny it can't be read - often reduced copy of reduced small type face. I mention them here for the sake of completeness and because all too often, study materials with these blemishes are despatched.

There are other factors about print which should also be considered. Research has shown that within a wide range of tolerance, print size, type face, and letter spacing (eg. 10 pitch, 12 pitch, or the compact print of typesetting) have little effect on gaining knowledge.

What appears to be important is the time taken for learning. Students with severe visual handicaps successfully learn from print which is enlarged many times through TV cameras or a system of lenses. It just takes them longer. On the other hand cramped print fails to provide the graphic cues necessary for the initial processes of sorting and ordering to take place. We must try to strike a balance. We have found lines of between 65 and 75 spaces maximum are reasonably speedily read. Double columns with 40 spaces and three to five spaces between columns have been successfully used. The double column format allows full use to be made of the 20 percent reduction process common with stitch and fold booklets. Experience has shown us that the narrowest width for a column is about 30 spaces but 35 to 40 is better as fewer hyphenation problems are met.

We have found that the 10 pitch spaced Letter Gothic and Prestige Pica golf balls make a satisfactorily proportioned letter and spacing when reduced for copying. The 12 pitch Artisan (a sans serif type face) has been very useful where a smaller plainer letter is needed to contrast with the Prestige Pica. The Italic golf ball is useful for quotations, diagram and chart headings, and for sub-section headings when necessary. The smaller orator letters, and the capitals of letter gothic and artisan typefaces are useful for headings of topics, sections, modules etc. while the smaller compact faces are useful for labelling diagrams, photographs and charts.

Giving Emphasis

A common practice with some people who wish to add emphasis to their text is to type words in capital letters or to underline them. There are several reasons for avoiding this practice. Firstly, it is overcueing, i.e. doing the thinking for the reader. Secondly, ideas should be emphasised through the structure of the sentence and paragraph rather than some mechanical device. Finally, the insertion of capitals and underlining distract the reader's attention away from the words.

The choice of typesetting or typewriting is another question which cannot be resolved by considering only legibility as both can be read equally well. The choice could be arbitary, but perhaps should be decided more on 'student feelings' than any other grounds. While I know of no research in the area, discussions with students and visitors from overseas, lead me to think that typesetting is too formal and distances the reader from the writer. Typewritten materials carry informal messages which appear to make students feel closer to the writer. Some students have reported that they feel that the lecturer has typed it especially for them.

Using Graphics

Diagrams, charts and tables, play an important part in helping to improve both the graphic layout of a page and the overall readability of study materials. Diagrams and other visual aids should be treated as an important means of communication and some time should be spent in seeing that they do communicate the intended meaning. If an idea can be expressed better by a diagram, a chart, a table, or even a humble list, it should be presented this way. A well designed graphic should add interest to the appearance of the page as well as giving information. Before starting to prepare a graphic, one should be clear about its intent. A graphic which demonstrates one or two ideas is usually better than one which tries to incorporate a large number. A method which helps prevent the proliferation of ideas within the one graphic is to write down the intent of the graphic at the outset and ruthlessly eliminate any material not leading to that goal. Remember graphics should be made straightforward and direct.

Where possible, information contained in graphics should follow left to right and top to bottom thus making it easier for the reader to carry out the early processing steps. Line and bar graphs are particularly useful when specific facts are to be conveyed. Pie charts are good for giving a broad coverage and are best expressed as percentages. Hawkins (1975) showed that if pie charts are to be compared with each other they should be of the same dimensions. Diagrams should be labelled carefully with only the required parts systematically labelled. While an over-abundance of information can be confusing and time-consuming, insufficient labels are just plain frustrating as the reader is foiled in his attempts to sort and order the material. Again a balance must be maintained.

The location of all graphic materials within the text is very important. The writer should insert notes to the typist identifying the locations of the various graphics. Ideally a graphic will appear on the same page as the text in which it is discussed. If this is not possible it should appear on a facing page or the preceding page, which makes it easier for the reader to find than on the following page. If the chart or table needs to be discussed more than once then it should appear alongside the first discussion. If it is very important it should be repeated. Sometimes reference is made to the table or diagram earlier than its most important location, yet the reference is not of sufficient importance to have the diagram placed beside it. Should the graphic be referenced or ignored? Ideally it is better to outline clearly in the text the facts which could be obtained from the graphic and press on with the writing. The bunching of diagrams etc. at the end of a study guide as an appendix may be acceptable to provide validity in a research report, but if the reader actually needs to use them then they should always be where he requires them.

Establishing Rapport

Comic strips, cartoons, jokes, etc. play an important part in establishing rapport. They should be selected on their ability to convey the general idea of the content which surrounds them not because they are funny per se and help break up the text. While comics will stop the readers progress through the material, they should encourage the student to reflect about the concepts being presented.

The final link in the communication model is the reader. Earlier I discussed the sort of perspectives and environment that he may be bringing to the communication. How can the writer be assured that the material will carry out its intended task? There is really only one way of being sure and that is by testing the materials on a sample of its potential audience. Ideally this would be with several readers under the conditions in which they would normally encounter the material. In reality this is not so easy and samples must be obtained which approximate the audience. To be really effective the testing should include objective and ethnographic data. The objective review could consist of an objective measure such as a readability test or some other past test and will provide data about the difficulty of the text, while an ethnographic measure will provide information which is concerned with the reader's perceptions of the text. Through it the author can discover if the reader thought the material was pitched at the right level. Was it too condescending? Was it too simple, repetitive, redundant, interesting, dull? Where specifically can these improvements be made? This type of information can only be obtained by talking with the reader in a non-threatening situation. Both the writer and the reader need to see the exercise as a means of improving the text and not as an evaluation of either party.

In this paper I set out to describe the basic assumptions or philosophy, which I believe, could provide a starting point for writer's of study materials. There is a theoretical base (backed up with a reasonable amount of research) upon which one can plan printed materials which will ensure that the clearest messages possible are sent to the reader. ❦

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Conference Review

At the end of any conference or seminar, the participants often wonder what has been achieved. Professor Donald Bewley was asked to answer this question by putting the Readability Conference into a context of past events and future innovations in distance learning.

Conference Review

by Donald Bewley

Professor Donald Bewley has been Director of Extramural Studies at Massey University since 1967. Previously he taught internal and extramural courses in the Massey Department of Education having begun extramural teaching as lecturer in Education at the University of New England, New South Wales 1960-1963. Apart from extramural studies his other academic interests are in teacher education in developing countries especially South East Asia and the Pacific. In 1976 he was seconded to the University of the South Pacific as Professor of Education and Head of the School of Education. Professor Bewley has Masters' degrees from Oxford in History, Edinburgh in Education and Psychology and a Diploma in Education from Trinity, Dublin.

In mid-June 1980, Massey University was the venue for a conference whose twenty members exchanged information and ideas from their studies of the readability of material used in distance teaching, their research into the uses of the 'cloze' technique and their experience with the organisation, editing and presentation of distance education material.

Earlier Gathering

In September of the previous year several of these researchers had met at the New Zealand Council for Educational Research (NZCER) to discuss distance learning research methodology. That gathering and the Massey conference, with others scheduled for the future, are the result of a number of developments in education at a distance:

1. Educational climate:

   It had become clear that resources were being provided for distance learning institutions at an increasing rate while those for face-to-face teaching were slowing down. There were a number of reasons for this, some associated with improvement of opportunity for lifelong education, some with the worldwide development of distance education, some with the economics achieved in distance education which requires less investment in buildings, and allows its students to contribute to the economy while they study.

2. Growth in distance learning institutions:

Massey University extramural enrolments had significantly increased and were rising faster than internal numbers. New staff for the Centre for University Extramural Studies (CUES) were added: first a Resources Officer to assist in course presentation and educational technology, then a Research Officer. Previous research by members of the Centre, Massey's academic staff and by students thus achieved a focus. Over recent years the Technical Correspondence Institute (TCI) had become increasingly interested in carrying out broad-based research on its own work. Meanwhile the New Zealand Correspondence School's (NZCS) adult enrolment had dramatically increased and its teacher education wing was developing its identity as the Advanced Studies for Teachers' Unit (ASTU) and the role of the school was shifting as new clientele and new curricula came forward.

3. Working party on distance learning:

Since 1975 a group appointed by the Director General of Education and representing the various institutions, had been reviewing the New Zealand distance education scene. Its report contained recommendations encouraging research and encouraging more cooperation among the institutions.

4. Research isolation:

Distance learning researchers working in isolation in a specialised field already felt the need to discuss common methods and problems with someone like themselves. NZCER had recently established an Adult Learning Unit with the aim of, among other things, promoting and coordinating research into distance learning at the tertiary level. Marianne Tremaine at CUES at Massey University was working on a study of why students withdraw from extramural courses. John McLellan of Palmerston North Teachers College was also investigating withdrawals but specifically teachers studying with ASTU. Nola Holmes of TCI joined with

Graham Wagner of NZCER in a joint study of the readability of TCI study guides/assignments. Meanwhile researchers at other institutions were turning increasingly to distance learning, but each separately. To overcome this isolation, NZCER convened a meeting of these individuals and a few others with similar interests. The researchers at their initial meeting were given a preview of the Working Party Report so that they could take up the recommendations on research without waiting for the Report to be published. From their discussions followed a wider interest in 'readability' as a project of interest to all distance education practitioners.

The Massey Conference

The Readability Conference at Massey University was for the most part a 'workshop', about 'work in progress'. It foreshadowed results rather than argued with hard data for immediate and substantial changes. However, it was apparent that the members who were course design specialists expected strong support to emerge for their efforts at monitoring the teaching which the institutions offer so variously. And the Massey conference did have both immediate and long-range significance.

Firstly, it involved the several institutions of New Zealand distance education (which fit together as a remarkably comprehensive national system) in similar research activities. Since each institution has its own clientele and programmes, and its own sphere of activity which for the most part avoids duplicating the work of other distance institutions, they tend to operate separately from each other. Research is one area where cooperation overcomes this tendency for separateness.

Secondly, this research conference and its predecessor indicate the willingness of the distance education institutions to submit their materials to tests of quality that are both rigorous and specific to the objectives of distance teaching. No longer do they need to be defensive as they have been in the past about the validity of education at a distance, whether by correspondence, cassette, radio, on-campus or off-campus weekend schools or other more spectacular methods. Distance education is not by its nature a deficient form of education. Some people whom it serves would indeed prefer internal study; but there are now many others who prefer the independence that distance education confers. There are however, deficiencies that occur in any kind of teaching that suitably designed research helps identify and whose adverse effects we can try to reduce.

Looking Forward

At the conclusion of the Massey conference I was asked to speak about the future of distance education. Not being a seer or prophet, I could only peer from this point in time, backwards to recognise the way we have come, forwards along the tracks that are already signposted. There may be revelations or cataclysms ahead that are imaginable but not predictable; they do not form part of this perspective, which surveys only what is already apparent.

In the past distance education has enjoyed constant public approval even if academic support has at times been reluctant. The early settlers' view of education was strongly egalitarian; they conceded no educational disadvantage to families who went the last step to the remotest farmlands of this most distant colony. They were moreover reluctant to favour town over country. While striving for education for their children, they also set no age limit on the chance to make good, whether economically or educationally. Since education was one of those items of quality from their original homeland (where many might never have enjoyed it) it seemed vital to import, adapt and develop it in this unfamiliar setting. Like much else, education was tinged with parsimony, making a virtue of slender resources, stretching the last farthing to its utmost by ingenuity and cooperative self-help. We can still find all these features in New Zealand distance education. They are for the most part positive and worthwhile, yet we have tended to keep them to ourselves, to be diffident about the homespun, unorthodox, economical quality of our distance education ventures. Research is a sign perhaps that our diffidence is waning, that we are increasingly willing to test our adaptations, that confidence in our achievements is growing.

It may be impossible to put a starting date on 'distance education' in New Zealand. It has many origins and roots. However we know that university education in New Zealand never lacked the distance dimension, based as it was in early days on prescriptions from Britain and with opportunity for extramural students, remote and absent from classes, to study independently for the university's examinations. We can be sure too that the Correspondence School in 1922 became the first institution in New Zealand exclusively concerned with teaching at a distance. With the establishment just after World War II of the Technical Correspondence Institute, the development of a university tuition system in 1960 which became centred on Massey University, and a Workers Educational Association venture into correspondence 'adult education' for trade union members, New Zealand - uniquely perhaps throughout the world - was able to offer a replica, by distance education means, of its whole formal education system.

However, it is not just a product of the past, now well grown and flourishing, that we are testing. New modes and justifications for distance education have emerged. Our recent, renewed commitment to lifelong education - ensuring recurrent opportunities for individuals to revitalize their qualifications, redirect their vocations, recapture and fulfil fresh aspirations in their working and personal lives - finds practical scope and real possibility in part-time, mid-life, independent study.

'Life-long' education gives encouragement to systems which go beyond the conventional period of study, during childhood and early adulthood. Some new 'community education' institutions have been set up to provide this renewable opportunity. But it has been realised however that among the existing institutions, those for distance education were already providing a second-chance, recurrent, lifelong educational opportunity.

This realisation has been dramatised by the Open University and by its positive approach to curriculum and by its use of technology and the media for distance education purposes. The less glamorous correspondence institutions were temporarily overshadowed. 'Open' education became a catch cry. We who ask mature-age students to make a case - then judge those cases and express our hesitation about some by asking them to prepare themselves more thoroughly - may seem reactionary. Yet in New Zealand a much higher proportion of the population gain access internally to higher education and we provide distance education for a larger proportion of our citizens than other countries.

However from our past we have inherited one consistent attitude which has held us in thrall and only now is being challenged: that distance education is a mere substitute for the more desirable, internal mode of study, and should be measured by criteria primarily established for face-to-face teaching. We have insisted on elements of contact, anxiously assessing minimum levels acceptable for credibility, wondering how much attendance should be compulsory, devising off-campus opportunities for teachers and learners to meet, however fleetingly.

Advantage of Distance Learning

But not only must we analyse more sharply those matters of contact, which are in effect the negatives of distance teaching, but we must ensure recognition for those features of education which may be intensified by learning at a distance. At least as important as the opportunity of discussion with others, is the opportunity for independent study, untrammelled by the schedules devised by others. It can be argued that 'ivory tower' institutions were a form of domestic organisation, a non-work situation that freed the individual to create his own private study schedule. Independence for study exists in other contexts but it is a complaint that can be laid against the schools and universities that their courses have become excessively programmed and scheduled, leaving too little time for self-initiated, self-disciplined study. Of course not every student who must enrol at a distance possesses these virtues that the most successful distance students exhibit. But in considering such support services as we may need - in these times not only of energy economy and rising travel costs, but also rapidly developing information technologies - we should perhaps think more of voice-to-voice, mind-to-mind contacts than the face-to-face, eyeball-to-eyeball relationships which have dominated our attitudes in the past.

Worthwhile conferences do not just happen. The Massey conference was fruitful because Marianne Tremaine, Research Officer at CUES and Graham Wagner at NZCER planned and programmed it well; because NZCER provided funds to underwrite that planning and the publication of the proceedings; because the researchers prepared serious and substantial papers as the basis for our discussion; and because all the participants came briefed to bring their own experience and insight to bear on the key issues.

With all members of the conference deserving thanks for the way they contributed to the free exchange of information, it is hard to single out anyone for special gratitude. Perhaps it is due to all those who value New Zealand distance education and what it has to offer to the further education of New Zealanders removed from the support systems of traditional classroom teaching and learning. It is their support that gives encouragement to our research into readability of distance learning study materials.